



# Public Works and Government Services Canada

Requisition Number: EZ899-141504/A

~~MERX ID Number~~ \_\_\_\_\_

SPECIFICATIONS for:

**WANETA PORT OF ENTRY – Building  
Envelope Remediation**  
10290 Highway 22A  
Salmo, BC


Project Number: R.066395.003

**APPROVED BY:**

  
\_\_\_\_\_  
Regional Manager, AES

2013-10-09

\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Construction Safety Coordinator

2013-10-01

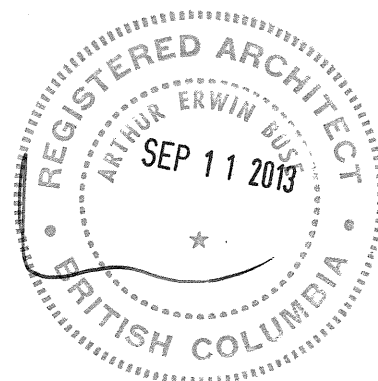
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**TENDER:**

  
\_\_\_\_\_  
Project Manager

2013-10-01

\_\_\_\_\_  
Date





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A001 Architectural Perspectives, *Issued for Tender, September 11, 2013.*  
A300 Key Plan / Floor Plan Demolition, *Issued for Tender, September 11, 2013.*  
A301 Floor Plan - New - *Issued for Tender, September 11, 2013.*  
A302 Roof Plan - *Issued for Tender, September 11, 2013.*  
A400-D Elevations - Demolition - *Issued for Tender, September 11, 2013.*  
A400-N Elevations - New - *Issued for Tender, September 11, 2013.*  
A402 Elevations - Existing - *Issued for Tender, September 11, 2013.*  
A700 Details - *Issued for Tender, September 11, 2013.*  
A701 Details - *Issued for Tender, September 11, 2013.*

**END OF SECTION**





## **1 GENERAL**

### **1.01 WORK DESCRIBED BY CONTRACT DOCUMENTS**

- .1 The work of this contract comprises of the partial building envelope repair of the Waneta Port of Entry border crossing, located at 10290 Highway 22A, Salmo, British Columbia.
- .2 Work to be performed under this Contract includes, but is not limited to, the following items covered further in the Contract documents:
  - .1 Building Envelope Repair:
    - .1 removal and disposal of existing metal wall panels and roof cladding, air barrier, and flashings as indicated, including removal and reinstallation of existing soffit and glazing where required.
    - .2 removal and disposal of exterior wood windows and installation of new fiberglass windows, as indicated.
    - .3 installation of air barrier, rainscreen, wood panels, metal roofing and flashings and sealant as indicated.
    - .4 staining of new wood paneling.
    - .5 removal and refinishing of existing exterior doors, as indicated.
    - .6 temporary removal and reinstallation of any interior furniture (workstations) that obstruct construction.
- .3 Departmental Representative will occupy premises during entire project period for normal operations. Cooperate with Departmental Representative in scheduling operations to minimize conflict and to facilitate usage.

### **1.02 TIME OF COMPLETION**

- .1 Commence work upon notification of acceptance and complete within 18 weeks.

### **1.03 MINIMUM STANDARDS**

- .1 Work to conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada 2010 (NBC) and applicable Provincial and Municipal codes. In the case of conflict or discrepancy, the most stringent requirement applies.
- .2 Meet or exceed requirements of Contract documents, specified standards, codes and referenced documents.

### **1.04 CONTRACT DOCUMENTS**

- .1 The Contract documents, drawings and specifications are intended to complement each other, and to provide for and include everything necessary for the completion of the work.
- .2 Drawings are, in general, diagrammatic and are intended to indicate the scope and general arrangement of the work. Drawings have been prepared in colour for clarity purposes and are intended to be printed in colour. Contractor is responsible for any misinterpretations caused as a result of printing in black and white.

### **1.05 DIVISION OF SPECIFICATIONS**

- .1 The specifications are subdivided in accordance with the current 6-digit National Master Specifications System.

- .2 A division may consist of the work of more than one subcontractor. Responsibility for determining which subcontractor provides the labour, material, equipment and services required to complete the work rests solely with the Contractor.
- .3 In the event of discrepancies or conflicts when interpreting the drawings and specifications, the specifications govern.

#### **1.06 TAXES**

- .1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

#### **1.07 REGULATORY REQUIREMENTS**

- .1 Obtain and pay for - Building Permit, Certificates, Licenses and other permits required by regulatory municipal, provincial or federal authorities to complete the work.
- .2 Provide inspection authorities with plans and information required for issue of acceptance certificates.
- .3 Furnish inspection certificates in evidence that the work installed conforms with the requirements of the authority having jurisdiction.

#### **1.08 PROJECT MEETINGS**

- .1 Departmental Representative will schedule a project start-up meeting following notice of acceptance.
- .2 Agenda to include lines of communication, contact information, scheduling and coordination.
- .3 Subsequent meetings will be called as required.

#### **1.09 CONTRACTOR'S USE OF SITE**

- .1 Use of site:
  - .1 Waneta Port of Entry will remain an active border crossing. Canada Border Services Agency (CBSA) has control over the site. All border activities and security controls must remain operational at all times unless otherwise indicated. Coordinate and seek prior approval with the Departmental Representative for all activities that impact on-going operations.
  - .2 Work restrictions and security provisions will be enforced.
  - .3 Assume responsibility for assigned premises for laydown and storage areas and for performance of this work.
  - .4 Be responsible for coordination of all work activities on site, including the work of other contractors engaged by the Departmental Representative.
- .2 Perform work in accordance with Contract documents. Ensure work is carried out in accordance with indicated phasing.
- .3 Do not encumber site with material or equipment. Contractor not to walk back and forth through vehicle lanes.
- .4 Maintain scaffolding and hoarding throughout duration of work. Do not exceed areas indicated unless written approval by Departmental Representative is provided.

- .5 Execute work with least possible interference or disturbance to normal use. Make arrangements with Departmental Representative to facilitate work as stated.
- .6 Maintain existing services and provide for personnel, visitor and vehicle access.
- .7 Where security is reduced by work, provide temporary means to maintain security. Review measures with Departmental Representative before proceeding.

#### **1.10 HOURS OF WORK**

- .1 The Waneta Port of Entry is operational from 09:00 to 17:00, 7 days a week.
- .2 Hours of work :
  - .1 Contractor may submit work schedule in cooperation with Departmental Representative. Work on the east elevation adjacent to north-bound traffic lane must be completed after hours. After hours escort will be required
- .3 Carry out noise generating Work during low volume hours.
  - .1 Low volume hours are Monday to Thursday 09:00 - 14:00.
    - .1 Decibel level not to exceed 55 at PIL or Secondary Inspection Areas.
- .4 Notify and seek approval from Departmental Representative and request for escort of all after hours work, including weekends and holidays.

#### **1.11 NON SMOKING ENVIRONMENT**

- .1 Smoking is not permitted on site.

#### **1.12 WORK SCHEDULE**

- .1 Provide detailed project schedule (Gantt Bar Chart) within 5 working days of Award of Contract date showing activity sequencing, interdependencies and duration estimates. Include listed activities as follows:
  - .1 Shop drawings.
  - .2 Samples.
  - .3 Approvals.
  - .4 Procurement.
  - .5 Construction.
  - .6 Installation.
  - .7 Site works.
  - .8 Testing.
  - .9 Acceptance.
- .2 Do not change approved schedule without notifying Departmental Representative.
- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.
- .4 Schedule Work in consultation with Departmental Representative to minimize impact on public use of facility during operating hours.

#### **1.13 SUBMITTALS**

- .1 Submissions to be made in accordance with Section 01 33 00 – Submittal Procedures.

#### **1.14 COST BREAKDOWN**

- .1 Before submitting the first progress claim, submit a breakdown of the Contract lump sum prices in detail as directed by the Departmental Representative and aggregating Contract price.

#### **1.15 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Contract Specifications.
  - .3 Addenda to Contract Documents.
  - .4 Copy of approved work schedule.
  - .5 Reviewed and approved Shop Drawings.
  - .6 List of Outstanding Shop Drawings.
  - .7 Change Orders.
  - .8 Other Modifications to Contract.
  - .9 Field Test Reports.
  - .10 Reviewed and approved samples.
  - .11 Copy of Approved Work Schedule.
  - .12 National Building Code, 2010.
  - .13 Health and Safety Plan and Other Safety Related Documents.
  - .14 Other documents as specified.

#### **1.16 EXAMINATION**

- .1 Examine site and be familiar and conversant with existing conditions likely to affect work.
- .2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims (photographs not to include security equipment or uniformed staff on duty).

#### **1.17 EXISTING SERVICES**

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by the authorities having jurisdiction.

#### **1.18 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment indicated or specified are to be considered as approximate.
- .2 Locate equipment to provide minimum interference and maximum usable space, and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain his approval for actual location.
- .4 Submit field drawings or shop drawings to indicate the relative position of various services and equipment when required by the Departmental Representative and/or as specified.

#### **1.19 SETTING OUT OF WORK**

- .1 Existing furniture (workstations): where necessary and with the guidance of CBSA Designated Representative, temporarily move within same area any interior furniture that obstructs construction. Do not disconnect any electronic (computer) equipment. Return furniture to original locations once construction completed, wipe clean. Provide 1 week advance notice to Departmental Representative of furniture requiring temporary moving.
- .2 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .3 Provide devices needed to lay out and construct work.

#### **1.20 ACCEPTANCE OF SUBSTRATES**

- .1 Each trade shall examine surfaces prepared by others and job conditions which may affect his work, and shall report defects to the Contractor. Commencement of work shall imply acceptance of prepared work or substrate surfaces.

#### **1.21 QUALITY OF WORK**

- .1 Ensure that quality workmanship is performed through use of skilled and experienced tradesmen, under supervision of qualified journeyman.
- .2 The workmanship, erection methods and procedures to meet minimum standards set out in the National Building Code Construction Standards.
- .3 In cases of dispute, decisions as to standard or quality of work rest solely with the Departmental Representative, whose decision is final.

#### **1.22 WORKS COORDINATION**

- .1 Coordinate work of subtrades:
  - .1 Designate one person to be responsible for review of contract documents and shop drawings and managing coordination of Work.
- .2 Convene meetings between subcontractors whose work interfaces and ensure awareness of areas and extent of interface required.
  - .1 Provide each subcontractor with complete plans and specifications for Contract, to assist them in planning and carrying out their respective work.
  - .2 Develop coordination drawings when required, illustrating potential interference between work of various trades and distribute to affected parties.
    - .1 Pay particularly close attention to overhead work or near to building structural elements, including existing roof.
    - .2 Identify on coordination drawings, building elements and interface requirements.
  - .3 Facilitate meeting and review coordination drawings. Ensure subcontractors agree and sign off on drawings.
  - .4 Publish minutes of each meeting.
  - .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submit shop drawings and of rebuilt components only after coordination meeting for such items has taken place.

- .4 Work cooperation:
  - .1 Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of interference.
  - .2 Ensure that each trade provides all other trades reasonable opportunity for completion of Work and in such a way as to prevent unnecessary delays, patching and removal or replacement of completed work.
  - .3 Ensure disputes between subcontractors are resolved.
- .5 Departmental Representative is not responsible for, or accountable for extra costs incurred as a result of Contractor's failure to coordinate Work.
- .6 Maintain efficient and continuous supervision. Full-time site superintendent required throughout project.

#### **1.23 APPROVAL OF SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

- .1 In accordance with Section 01 33 00 - Submittals Procedures, submit the requested shop drawings, product data, MSDS sheets and samples indicated in each of the technical Sections.
- .2 Allow sufficient time for the following:
  - .1 Review of product data.
  - .2 Approval of shop drawings.
  - .3 Review of re-submission.
  - .4 Ordering of approved material and/or products - refer to technical sections.

#### **1.24 TESTING AND INSPECTIONS**

- .1 Particular requirements for inspection and testing to be carried out by testing service or laboratory approved by the Departmental Representative.
- .2 The Contractor will appoint and pay for the services of testing agency or testing laboratory as specified, and where required for the following:
  - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .2 Inspection and testing performed exclusively for Contractor's convenience.
    - .1 Mill tests and certificates of compliance.
    - .2 Tests specified to be carried out by Contractor under the Departmental Representative's supervision.
- .3 Where tests or inspections by designated testing laboratory reveal work is not in accordance with the Contract requirements, Contractor shall pay costs for additional tests or inspections as the Departmental Representative may require to verify acceptability of corrected work.
- .4 Contractor shall furnish labour and facilities to:
  - .1 Notify Departmental Representative in advance of planned testing.
- .5 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .6 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Departmental Representative.



- .7 Provide Departmental Representative with 2 copies of testing laboratory reports as soon as they are available.

#### **1.25 AS-BUILT DOCUMENTS**

- .1 The Departmental Representative will provide 2 sets of drawings and 2 sets of specifications for "as-built" purposes.
- .2 As work progresses, maintain accurate records to show all deviations from the Contract documents. Note on as-built specifications, drawings and shop drawings as changes occur.

#### **1.26 CLEANING**

- .1 Daily conduct cleaning and disposal operations. Comply with local ordinances and anti-pollution laws.
- .2 Ensure cleanup of the work areas each day after completion of work.
- .3 In preparation for interim and final inspections:
  - .1 Examine all sight-exposed exterior surfaced and concealed spaces.
  - .2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed exterior finished surfaces, including glass.
- .4 Use cleaning materials and methods in accordance with instructions of the manufacturer of the surface to be cleaned.

#### **1.27 CONTROL**

- .1 Provide temporary dust tight screens and/or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.
- .2 Protect work area with scaffolding structure for work with weather-tight polyethylene film during construction.
- .3 Maintain and relocate protection until work is complete.

#### **1.28 PUBLIC WAY CONSTRUCTION**

- .1 Design, erect and maintain hoarding and covered pedestrian walkways to support all loads including windloads and provide protection, complete with signs and electrical lighting as required by authority having jurisdiction and Departmental Representative.

#### **1.29 ENVIRONMENTAL PROTECTION**

- .1 Prevent extraneous materials from contaminating air beyond construction area, by providing temporary extensions to Mechanical intake louvers during work.
- .2 Do not dispose of waste or volatile materials into water courses, storm or sanitary sewers.
- .3 Ensure proper disposal procedures in accordance with all applicable provincial regulations.

**1.30 MAINTENANCE MATERIALS, SPECIAL TOOLS AND SPARE PARTS**

- .1 Specific requirements for maintenance materials, tools and spare parts are specified in individual technical sections.

**1.31 ADDITIONAL DRAWINGS**

- .1 The Departmental Representative may furnish additional drawings for clarification. These additional drawings have the same meaning and intent as if they were included with plans referred to in the Contract documents.
- .2 Upon request, Departmental Representative may furnish up to a maximum of 10 sets of Contract documents for use by the Contractor at no additional cost. Should more than 10 sets of documents be required the Departmental Representative will provide them at additional cost.

**1.32 SYSTEM OF MEASUREMENT**

- .1 The metric system of measurement (SI) will be employed on this Contract.

**1.33 FAMILIARITY WITH SITE**

- .1 Before submitting tender, visit site - as indicated in tender documents and become familiar with all conditions likely to affect the cost of the work.

**1.34 SUBMISSION OF TENDER**

- .1 Submission of a tender is deemed to be confirmation of the fact that the Tenderer has analyzed the Contract documents and inspected the site, and is fully conversant with all conditions.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – Demolition for Minor Works.

### **1.02 ACCESS AND EGRESS**

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
- .2 All construction, staff and delivery vehicles accessing contractor's lay-down area will require escort in and out by PWGSC on-site buildings maintenance staff.
- .3 All deliveries and construction vehicle access which require escort services against PIL traffic will require a minimum of 24 hours notice to CBSA so that an escort may be arranged.

### **1.03 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security as approved by Departmental Representative.
- .4 Contractor permitted to use public washrooms. Keep facilities clean.
- .5 Closures: protect work temporarily until permanent enclosures are completed.

### **1.04 HOURS OF WORK**

- .1 The border is operational from 09:00 to 17:00, 7 days a week. Contractor may set his own schedule of work onsite, within restrictions specified. Submit proposed hours-of-work to Departmental Representative for review and approval with Work in accordance with Section 01 11 55 – General Instructions.
- .2 Work on the east elevation adjacent to north-bound traffic lane must be completed after hours. After hours escort will be required.
- .3 Disruptive construction noise and operations may require work to be executed during low border volume periods. Low volume hours are Monday to Thursday, 09:00 – 14:00.
- .4 All construction activity requiring access to the interior of the buildings, such as connections for power, data, communications and security, must be executed Monday through Friday between 09:00 and 17:00 hours. Should there be need for interruption to operational equipment, Contractor shall give one (1) week notice to Departmental Representative. Request shall be subject to CBSA approval of date and time, and may require that said work be completed outside of normal working hours.

- .5 Any work which impacts the operations onsite (traffic, commercial, support staff, etc.) must have one (1) week notice and must be approved by CBSA. CBSA withholds the right to have work completed at low volume periods.
- .6 Any work which impacts the flow of traffic (bus, regular passengers, or trucks) must be approved by CBSA and must have two (2) weeks' notice.

#### **1.05 ALTERATIONS AND REPAIRS TO EXISTING BUILDING**

- .1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises.
- .2 Maintain existing services and abide by regulations for personnel and vehicle access.
- .3 Closures: protect work temporarily until project is complete.
- .4 Protect existing SBS roof finish during demolition and completion of Work. Provide protective sheathing to roof. Repair or make good to better condition any damage to existing roof.
- .5 Emergency generator to remain operational and free from debris.
- .6 Parking available to the Contractor where indicated. Work truck will be allowed to be located in the Contractor's laydown area. Contractor to temporarily remove and reinstall jersey barriers as required for access to parking and laydown area. Do not occupy any other parking areas without the approval of the Departmental Representative.

#### **1.06 EXISTING SERVICES**

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where work involves breaking into or connecting to existing services, give Departmental Representative one (1) week notice for permission. All shut-downs shall occur during low border volume periods. The maximum number of shut-down periods, is limited to four (4) for duration of the project.
- .3 Optimize and plan shut-downs so that services are restored in time for normal traffic volume and facility operation hours. Coordinate all shut-downs with utility providers and CBSA.
- .4 Provide for personnel, pedestrian and vehicular traffic.
- .5 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .6 Contractor will be held responsible for damages to facility equipment as the result of service shut-downs.
- .7 Contractor will be held responsible for unscheduled shut-downs of building utilities and services.
- .8 Contractor will not be allowed to connect to Owner's existing data and communication services for his own use.

#### **1.07 SPECIAL REQUIREMENTS**

- .1 Traffic lane closures:
  - .1 Request for lane closure requires a minimum of seven (7) working days notice and must be approved by Departmental Representative. During lane closure, provide wayfinding signage for pedestrian and vehicular traffic.
- .2 Security Cameras:
  - .1 Security cameras to remain operational. Cameras requiring temporary relocation to be serviced by Departmental Representative approved contractor.
- .3 Communication Antennae:
  - .1 Communication antennae to remain operational. Antennae requiring temporary relocation to be serviced by Departmental Representative approved contractor.
- .4 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.
- .6 Noise Generation:
  - .1 Means and procedures of controlling and isolating other excessive or disturbing noise and vibration affecting occupied areas shall be the responsibility of the Contractor and approved by the Departmental Representative and CBSA.

#### **1.08 SECURITY**

- .1 Obey the following CBSA Security Directives:
  - .1 Contractor's Site Superintendent shall sign out a Contractor pass for each construction crew member at the start of the project. Wear pass visibly at all times while on CBSA property. Surrender pass to designated CBSA official at the end of the project. Replacement costs of \$100 per pass shall be assessed against the Contractor for any passes lost during the course of the project.
  - .2 Contractor's personnel shall be in possession of Government issued picture identification at all times while on CBSA property.
  - .3 Remain within the designated work areas. Movement within CBSA restricted areas must be approved and may require to be escorted by CBSA staff.
  - .4 Do not interfere with border inspection processes. Move away from CBSA officials interacting with the travelling public to avoid overhearing potentially sensitive and personal conversations.
  - .5 Be accountable for tools/equipment at all times. Do not leave tools unattended and/or within reach of the travelling public.
  - .6 Act professionally at all times. No foul language or rude behavior.
  - .7 Do not interact with the travelling public, unless authorized to do so where required.
  - .8 Obey uniformed CBSA officers when given operational directives (these may include being instructed to move off site during a dangerous situation or to stop work because of operational requirements. Report to the Departmental Representative when such instructions have been given, as early as is convenient). Do not take directions from uniformed officers of PWGSC building maintenance regarding project construction issues.

- .9 Security escort:
  - .1 Personnel employed on this project must be escorted by a commissionaire when executing work inside building, including electrical or communication locations.
  - .2 Submit an escort request to Departmental Representative at least seven (7) days before service is needed.
  - .3 Any escort request may be cancelled free of charge if notification of cancellation is given at least 24 hours before scheduled time of escort. Cost incurred by late cancellation will be assessed against the Contractor at \$30 (or current rate) times hours booked.

**1.09 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not permitted.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative as specified in technical sections.

### **1.02 APPOINTMENT AND PAYMENT**

- .1 Contractor to pay for testing services as follows:
  - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .2 Inspection and testing performed exclusively for Contractor's convenience.
  - .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
  - .4 Mill tests and certificates of compliance.
  - .5 NACE Certified inspections and reports (where applicable).
  - .6 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
- .2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

### **1.03 CONTRACTOR'S RESPONSIBILITIES**

- .1 Provide labour, equipment and facilities to:
  - .2 Provide access to Work for inspection and testing.
  - .3 Facilitate inspections and tests.
  - .4 Make good Work disturbed by inspection and test.
  - .5 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative 72 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

Waneta Port of Entry – Building Envelope Remediation  
Project No.: R.066395.003  
September 11, 2013

**SECTION 01 29 83**  
**PAYMENT PROCEDURE FOR LAB TESTING**  
**PAGE 2**

**END OF SECTION**



**1 GENERAL**

**1.01 ADMINISTRATIVE**

- .1 Departmental Representative will arrange project meetings and assume responsibility for setting times, recording and distributing meeting minutes.
- .2 Attend project meetings throughout the progress of the work at the call of Departmental Representative.
- .3 Provide physical space and make arrangements for meetings.
- .4 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

**1.02 PRECONSTRUCTION MEETING**

- .1 Within ten (10) days after award of Contract, Departmental Representative will request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Contractor, major Subcontractors, field reviewers and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work: in accordance with Section 01 11 55 – General Instructions – Bar (Gantt) Chart.
  - .3 Schedule of submission of shop drawings and samples. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Delivery schedule of specified equipment.
  - .6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
  - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .8 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.
  - .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
  - .10 Monthly progress claims, administrative procedures, photographs, hold backs.
  - .11 Appointment of inspection firms.
  - .12 Insurances, transcript of policies.

**1.03 PROGRESS MEETINGS**

- .1 During course of Work and up to project completion, schedule progress meetings every two weeks. Additional meetings will be scheduled to resolve extraordinary issues as required.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum three (3) days prior to meetings.
- .4 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance.
- .5 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Review proposed changes for affect on construction schedule and on completion date.
  - .12 Other business.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

**1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 61 00 – Sheet Metal Roofing.
- .4 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .5 Section 07 92 00 – Joint Sealants.
- .6 Section 08 50 00 – Windows.
- .7 Section 09 91 13 – Exterior Painting.

**1.02 APPROVALS**

- .1 Approval of shop drawings and sample: refer to Section 01 11 55 – General Instructions.

**1.03 ADMINISTRATIVE**

- .1 This Section specifies the general requirements and procedures for the Contractor's submissions of shop drawings, product data, samples and other requested submittals to Departmental Representative for review. Additional specific requirements for submissions are specified in individual technical sections.
- .2 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .3 Where items or information is not produced in SI Metric units converted values are acceptable.
- .4 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .5 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .6 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review unless Departmental Representative gives written acceptance of specific deviations.
- .7 Make any changes in submissions which Departmental Representative may require consistent with Contract documents and resubmit as directed by Departmental Representative.
- .8 Notify Departmental Representative in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.
- .9 Do not proceed with work or order construction materials or products until relevant submissions are reviewed and approved by the Departmental Representative.

- .10 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .11 Verify field measurements and affected adjacent Work are co-ordinated.
- .12 Keep one reviewed copy of each submission on site.

#### 1.04 SUBMISSION REQUIREMENTS

- .1 Coordinate each submission with the requirements of the work and the Contract documents. Individual submissions will not be reviewed until all related information is available.
- .2 Accompany submissions with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .3 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract documents. **Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.**
  - .5 Details of appropriate portions of work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions (including identified field dimensions) and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Relationship to adjacent work.
- .4 After Departmental Representative's review, distribute copies. Keep one reviewed copy of each submission on site.

#### 1.05 SHOP DRAWINGS

- .1 Shop drawings: original drawings or modified standard drawings, diagrams, illustrations, schedules, performance charts, brochures or other data provided by Contractor to illustrate details of portions of work which are specific to project requirements.

- .1 Indicate materials, methods of construction and attachment or anchorage erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Provide cross references to drawings and specifications. Include draft copy of associated project warranty.
- .2 Submit electronic drawings for each requirement requested in technical specification sections and as requested by Departmental Representative. Where indicated, provide stamped and signed shop drawings by professional engineer registered or licensed in the Province of British Columbia.
- .3 Cross- reference shop drawing information to applicable portions of the Contract documents.
- .4 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .5 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.
- .6 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name, project number and address.
- .7 Submit electronic copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .8 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .9 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .10 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .11 Delete information not applicable to project.
- .12 Supplement standard information to provide details applicable to project.

#### **1.06 SHOP DRAWING REVIEW**

- .1 Review of shop drawings by the Departmental Representative is for the sole purpose of ascertaining conformance with the general concept.
- .2 Allow seven (7) business days for Departmental Representative's review of each submission.
- .3 This review shall not mean that the Departmental Representative approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same.
- .4 This review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and Contract documents.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with ordering materials or Work.
- .6 Make changes in shop drawings by Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested. All revisions to be clearly clouded.
- .7 Without restricting the generality of the foregoing, the Contractor is responsible for:
  - .1 Dimensions to be confirmed and correlated at the job site.
  - .2 Information that pertains solely to fabrication processes or to techniques of construction and installation.
  - .3 Coordination of the work and all sub-trades.
- .8 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copy will be returned and ordering, fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .9 Shop drawings to incorporate applicable key plan, plan, elevations and details for all work submitted. No materials to be ordered and no work to be fabricated shall be undertaken until shop drawings and other related submittals are reviewed.

#### **1.07 PRODUCT DATA**

- .1 Product data: manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other specified information.
- .2 Delete information not applicable to project.
- .3 Supplement standard information to provide details applicable to project.
- .4 Cross-reference product data information to applicable portions of Contract documents.
- .5 Submit electronic copies of product data.

**1.08 SAMPLES**

- .1 Submit for review samples in duplicate as requested in individual technical specification Sections. Label samples with origin and intended use. One sample will be returned with Shop Drawing Review.
- .2 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .3 Where colour, pattern or texture is criterion, submit full range of samples.
- .4 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to ordering materials or proceeding with Work.
- .5 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

**1.09 MOCK-UPS**

- .1 Erect mock-ups where directed by Departmental Representative and in accordance with Section 01 45 00 - Quality Control.

**1.10 PROGRESS SCHEDULE**

- .1 Submit work schedule and cost breakdown in accordance with Section 01 11 55 – General Instructions.

**1.11 INSPECTION REPORTS**

- .1 Submit in duplicate test results and inspection reports where indicated.

**1.12 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution, monthly with progress statement and as directed by Departmental Representative.
- .2 Project identification: name and number of project, building name and elevation with date of exposure indicated.
- .3 Number of viewpoints: 4 locations.
  - .1 Viewpoints and their location as determined by Departmental Representative.
- .4 Frequency of photographic documentation: as directed by Departmental Representative.
  - .1 Before concealment of Work and as directed by Departmental Representative.

**1.13 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

**2 PRODUCTS**

**2.01 NOT USED**

.1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not Used.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – Demolition for Minor Works.

### **1.02 REFERENCES**

- .1 Manual of Uniform Traffic Control Devices for Streets and Highways (UTCD), 2002.

### **1.03 PROTECTION OF PUBLIC TRAFFIC**

- .1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.
- .2 When working on travelled way:
  - .1 Place equipment in position to minimize interference and hazard to travelling public in accordance with approval from Departmental Representative.
  - .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
  - .3 Do not leave equipment on travelled way overnight.
- .3 Do not close PIL lanes without approval of Departmental Representative seven (7) working days required. Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in Part D of UTCD. Refer to Section 01 14 00 - Work Restrictions.
- .4 As directed by Departmental Representative, provide lane detours to facilitate passage of traffic around restricted construction area.

### **1.04 INFORMATIONAL AND WARNING DEVICES**

- .1 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- .2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in Part D, Temporary Conditions Signs and Devices of UTCD manual.
- .3 Place signs and other devices in locations recommended in UTCD Manual.
- .4 Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of Departmental Representative.
- .5 Continually maintain traffic control devices in use:
  - .1 Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
  - .2 Remove or cover signs which do not apply to conditions existing from day to day.

### **1.05 CONTROL OF PUBLIC TRAFFIC**

- .1 Provide competent flag personnel, trained in accordance with, and properly equipped to as specified in UTCD manual in following situations:

- .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
- .2 Where temporary protection is required while other traffic control devices are being erected or taken down.
- .3 For emergency protection when other traffic control devices are not readily available.
- .4 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 REFERENCES**

- .1 Government of Canada
  - .1 Canada Labour Code, Part 2 Canada Occupational Safety and Health Regulations.
  - .2 Canada Occupational Health and Safety Regulations.
- .2 National Building Code of Canada (NBC) 2010
  - .1 Part 8 – Safety Measures at Construction and Demolition Sites.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Province of British Columbia
  - .1 Workers Compensation Act Part 3 – Occupational Health and Safety, RSBC 1996 - Updated 2006.
- .5 Canadian Standards Association (CSA) as amended:
  - .1 CSA Z797-2009 Code of Practice for Access Scaffold.
  - .2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes.
  - .3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures.
- .6 American National Standards Institute (ANSI):
  - .1 ANSI A10.3 Operations – Safety Requirements for Powder-Actuated Fastening Systems.

### **1.02 RELATED SECTIONS**

- .1 Section 02 41 99 – Demolition for Minor Works.
- .2 Section 02 85 00.02 – Mould Removal/Remediation – Medium Precautions.

### **1.03 WORKER'S COMPENSATION BOARD COVERAGE**

- .1 Comply with Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations and British Columbia Occupational Health and Safety Regulations.
- .2 Comply fully with the British Columbia Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.
- .3 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

### **1.04 COMPLIANCE WITH REGULATIONS**

- .1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

- .2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

#### **1.05 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit to Departmental Representative, submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Submit the following:
  - .1 Submit 2 copies of the Contractor's generic Health and Safety Plan and 2 copies of the site-specific Health and Safety Plan within 5 days after date of Notice to Proceed and prior to commencement of Work. Site-specific Plan must include the results of the site specific safety hazard assessment, and the results of the safety, health and hazard analysis for the site tasks as described in the Work plan, and proposed mitigations for the identified hazards.
  - .2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.
  - .3 Copies of incident and accident reports.
  - .4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
  - .5 Emergency Procedures.
  - .6 WCB Clearance Letter and WCB Contractor rating. Submit copy of final WCB Clearance Letter at project completion.
- .4 The Departmental Representative will review Contractor's site-specific Health and Safety Plan and emergency procedures and provide comments to Contractor within seven (7) business days after receipt of plan. Revise plan as appropriate and resubmit to Departmental Representative.
- .5 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .6 Submission and resubmission of the Health and Safety Plan to the Departmental Representative is for information and reference purposes only. It shall not:
  - .1 Be construed to imply approval by the Departmental Representative.
  - .2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
  - .3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

#### **1.06 RESPONSIBILITY**

- .1 Assume responsibility as the Prime Contractor for work under the contract.
- .2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

- .3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

#### **1.07 HEALTH AND SAFETY CO-ORDINATOR**

- .1 The Health and Safety Co-ordinator/Registered Occupational Hygienist/Certified Industrial Specified Hygienist must:
  - .1 Be responsible for completing all health and safety training sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .2 Be responsible for implementing, enforcing daily and monitoring site-specific Health and Safety Plan.
  - .3 Be on site during execution of Work.

#### **1.08 GENERAL CONDITIONS**

- .1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
- .2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
  - .1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
  - .2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

#### **1.09 REGULATORY REQUIREMENTS**

- .1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.
- .2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

#### **1.10 WORK PERMITS**

- .1 Obtain and pay for specialty permits related to project before start of work.

#### **1.11 FILING OF NOTICE**

- .1 The Contractor is to complete and submit a Notice of Project as required by provincial authorities.
- .2 Provide copies of all notices to the Departmental Representative.

#### **1.12 HEALTH AND SAFETY PLAN**

- .1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.
- .2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including but not limited to, the following:
  - .1 Primary requirements:

- .1 Contractor's safety policy.
- .2 Identification of applicable compliance obligations.
- .3 Definition of responsibilities for project safety/organization chart for project.
- .4 General safety rules for project.
- .5 Job-specific safe work, procedures.
- .6 Inspection policy and procedures.
- .7 Incident reporting and investigation policy and procedures.
- .8 Occupational Health and Safety Committee/Representative procedures.
- .9 Occupational Health and Safety meetings.
- .10 Occupational Health and Safety communications and record keeping procedures.
- .2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.
- .3 List hazardous materials to be brought on site as required by work.
- .4 Indicate engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.
- .5 Identify personal protective equipment (PPE) to be used by workers.
- .6 Identify personnel and alternates responsible for site safety and health.
- .7 Identify personnel training requirements and training plan, including site orientation for new works.
- .3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.
- .4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
- .5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

#### **1.13 EMERGENCY PROCEDURES**

- .1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
  - .1 Designated personnel from own company.
  - .2 Regulatory agencies applicable to work and as per legislated regulations.
  - .3 Local emergency resources.
  - .4 Departmental Representative site staff.
- .2 Include the following provisions in the emergency procedures:
  - .1 Notify workers and the first-aid attendant, of the nature and location of the emergency.
  - .2 Evacuate all workers safely.
  - .3 Check and confirm the safe evacuation of all workers.
  - .4 Notify the fire department or other emergency responders.
  - .5 Notify adjacent workplaces which may be affected if the risk extends beyond the workplace.
  - .6 Notify Departmental Representative site staff.
- .3 Provide written rescue/evacuation procedures as required for, but not limited to:

- .1 Work at high angles.
- .2 Work with hazardous substances.
- .3 Workplaces where there are persons who require physical assistance to be moved.
- .4 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

#### **1.14 HAZARDOUS PRODUCTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
- .2 Where use of hazardous and toxic products cannot be avoided:
  - .1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 33 00 - Submittal Procedures.
  - .2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.
  - .3 For work inside occupied buildings, give the Departmental Representative 48 hours notice for work involving hazardous substances (Canada Labour Code, Part II, Section 10), and before caulking.
  - .4 Provide adequate means of ventilation in accordance with Section 01 51 00 - Temporary Utilities.
- .3 Though unconfirmed, Work at site may involve contact with mould-containing gypsum wall board sheathing. Take appropriate precautions.

#### **1.15 ELECTRICAL SAFETY REQUIREMENTS**

- .1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
  - .1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
  - .2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

#### **1.16 ELECTRICAL LOCKOUT**

- .1 Develop, implement and enforce use of established procedures to provide lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.
- .2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.
- .3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

**1.17 OVERLOADING**

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation or damage to existing structure and finishes.

**1.18 FALSEWORK**

- .1 Design and construct falsework in accordance with CSA S269.1.

**1.19 SCAFFOLDING**

- .1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797 and B.C. Occupational Health and Safety Regulations.

**1.20 POWDER-ACTUATED DEVICES**

- .1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

**1.21 FIRE SAFETY AND HOT WORK**

- .1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.
- .2 Hot work includes cutting/melting with use of torch, or other open flame devices and grinding with equipment which produces sparks.

**1.22 FIRE SAFETY REQUIREMENTS**

- .1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code.

**1.23 FIRE PROTECTION AND ALARM SYSTEM**

- .1 Fire protection and alarm systems shall not be:
  - .1 Obstructed.
  - .2 Shut off.
  - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.
- .3 Be responsible / liable for costs incurred from the fire department, Departmental Representative resulting from false alarms.

**1.24 UNFORESEEN HAZARDS**

- .1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.



## **1.25 POSTED DOCUMENTS**

- .1 Post legible versions of the following documents on site:
  - .1 Health and Safety Plan.
  - .2 Sequence of work.
  - .3 Emergency procedures.
  - .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
  - .5 Notice of Project.
  - .6 Site plans.
  - .7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
  - .8 Workplace Hazardous Materials Information System (WHMIS) documents.
  - .9 Material Safety Data Sheets (MSDS).
  - .10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
- .2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.
- .3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

## **1.26 MEETINGS**

- .1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

## **1.27 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
- .3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 02 41 99 – Demolition for Minor Works.
- .2 Section 02 85 00.02 - Mould Removal/Remediation – Medium Precautions

### **1.02 REFERENCES**

- .1 Definitions:
  - .1 Environmental Pollution and Damage: presence of chemical, Physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
  - .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.
- .2 Reference Standards:
  - .1 U.S. Environmental Protection Agency (EPA)/Office of Water
    - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

### **1.03 FIRES**

- .1 Fires and burning of rubbish on site not permitted.

### **1.04 DRAINAGE**

- .1 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

### **1.05 POLLUTION CONTROL**

- .1 Control emissions from equipment and plant to local authorities' emission requirements.
- .2 Prevent extraneous materials from contaminating air and waterways beyond application area.
  - .1 Provide temporary enclosures.

### **1.06 NOTIFICATION**

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

- .1 Do not take action until after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Waste Management: separate waste materials for reuse and recycling.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

**END OF SECTION**

**1 GENERAL**

**1.01 REFERENCES AND CODES**

- .1 Perform Work in accordance with National Building Code of Canada (NBC), 2010 including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

**1.02 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

**1.03 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 08 99 – Rough Carpentry for Minor Works.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 61 00 – Sheet Metal Roofing.
- .4 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .5 Section 07 92 00 – Joint Sealants.
- .6 Section 08 50 00 – Windows.
- .7 Section 09 91 13 – Exterior Painting.

### **1.02 INSPECTION**

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, reviews, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, reviews, inspections or approvals before such is made, uncover such Work, have reviews, inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

### **1.03 INDEPENDENT INSPECTION AGENCIES**

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be in accordance with Section 01 29 83 – Payment Procedures for Testing Laboratory Services.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for re-testing and re-inspection or re-review.

**1.04 ACCESS TO WORK**

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

**1.05 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.06 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

**1.07 REPORTS**

- .1 Submit two (2) copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

**1.08 TESTS AND MIX DESIGNS**

- .1 Furnish test results as requested.
- .2 Cost of tests beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

**1.09 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in technical specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Departmental Representative.



- .3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Mock-ups may remain as part of Work.

**1.10 MILL TESTS**

- .1 Submit mill test certificates as required of specification Sections.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**



## **1 GENERAL**

### **1.01 REFERENCES**

- .1 Canadian Standards Association (CSA) as amended:
  - .1 CAN/CSA Z321-96(R2001), Signs and Symbols for the Occupational Environment.

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

### **1.03 ACCESS AND DELIVERY**

- .1 Only designated entrance may be used for access to building. Confirm with Departmental Representative.
  - .1 Maintain for duration of Contract.
  - .2 Make good damage resulting from Contractor's use.
- .2 Use of facilities will be granted to the Contractor through the Departmental Representative.
  - .1 Parking and laydown area is permitted as indicated and as directed by Departmental Representative. Contractor to temporarily remove and reinstall jersey barriers as required for access to parking and laydown area. CBSA staff has been instructed to have unauthorized vehicles towed at the Contractor's expense. Refer to Section 01 14 00 – Work Restrictions.

### **1.04 WATER**

- .1 Water supply is available at existing building and may be used for construction purposes at no cost.
  - .1 Hose bib location as indicated.

### **1.05 POWER**

- .1 Electrical power and lighting at existing buildings may be used for construction purposes at no extra cost, provided that warranties are not affected thereby and electrical components used for temporary power are replaced when damaged. Do not use emergency power or UPS panels for this purpose.
  - .1 Power located as directed by Departmental Representative.

### **1.06 HEATING AND VENTILATION**

- .1 Do not begin work until arrangements have been made with the Departmental Representative for protection of heating, ventilating and air-conditioning (temporary removal of existing exterior vents or louvres).
  - .1 If there is any dirt or dust in the heating and ventilating system, it will be the Contractor's responsibility to return to its original state in accordance with the Departmental Representative's specifications.
- .2 Prevent dust and odour migration to occupied areas.
  - .1 Do not deactivate HVAC system.

**1.07 TEMPORARY COMMUNICATION FACILITIES**

- .1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment necessary for own use and use of Departmental Representative.

**1.08 SANITARY FACILITIES**

- .1 Contractor is permitted to use public washrooms. Keep clean.

**1.09 SCAFFOLDING**

- .1 Construct and maintain scaffolding in rigid, secure and safe manner in accordance with Section 01 52 00 – Construction Facilities.
- .2 Erect scaffolding independent of walls. Remove promptly when no longer required.

**1.10 REMOVAL OF TEMPORARY FACILITIES**

- .1 Remove temporary facilities from site when directed by the Departmental Representative.

**1.11 SIGNS AND NOTICES**

- .1 Signs and notices for safety and instruction are permitted and shall be in both official languages or graphic symbols conforming to CAN/CSA-Z321.
- .2 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project or when directed by Departmental Representative.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED.**

- .1 Not Used.

**END OF SECTION**

**1 GENERAL**

**1.01 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
  - .2 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

**1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

**1.03 INSTALLATION AND REMOVAL**

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Indicate use of supplemental or other staging area.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Remove from site all such work after use.

**1.04 SCAFFOLDING**

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding, ladders, platforms and temporary stairs.

**1.05 BARRIERS AND ENCLOSURES**

- .1 In accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

**1.06 HOISTING**

- .1 Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists cranes to be operated by qualified operator.

**1.07 SITE STORAGE/LOADING**

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

**1.08 CONSTRUCTION PARKING**

- .1 Parking will be permitted on site as indicated and as directed by Departmental Representative. Contractor to temporarily remove and reinstall jersey barriers as required for access to parking and laydown area. Provide for additional parking off site if required.
- .2 Provide and maintain adequate access to project site.

**1.09 SECURITY**

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

**1.10 OFFICES**

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
- .2 Provide marked and fully stocked first-aid case in a readily available location.

**1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

**1.12 SANITARY FACILITIES**

- .1 Contractor permitted to use public washrooms. Keep area and premises in clean condition.

**1.13 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Refer to Section 01 14 00 – Work Restrictions.
- .2 Provide access as necessary to maintain traffic.
- .3 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .4 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
- .5 Protect travelling public from damage to person and property.
- .6 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .7 Verify adequacy of existing roads and allowable load limit on these roads. Contractor responsible for repair of damage to roads caused by construction operations.

- .8 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .9 Dust control: adequate to ensure safe operation at all times.
- .10 Provide snow removal during period of Work.

**1.14 CLEAN-UP**

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable, where directed by Departmental Representative.
- .4 Stack stored new or salvaged material not in construction facilities.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED.**

- .1 Not Used.

**END OF SECTION**





**1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – Demolition for Minor Works.
- .2 Section 02 85 00.02 – Mould Removal/Remediation – Medium Precautions.

**1.02 REFERENCES**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA-O121-M1978(R2003), Douglas Fir Plywood.

**1.03 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

**1.04 HOARDING**

- .1 Erect temporary building envelope enclosures to protect wall assemblies from elements during Work.
- .2 Erect and maintain pedestrian walkways and exits including roof and side covers, complete with signs and electrical lighting as required by law.
- .3 Protect site from damage by equipment and construction procedures.

**1.05 GUARD RAILS AND BARRICADES**

- .1 Provide as required by governing authorities.

**1.06 WEATHER ENCLOSURES**

- .1 Provide weather tight closures to unfinished remediated wall assemblies and other openings in exterior walls including vents, louvers, lighting, security cameras.
- .2 Design enclosures to withstand wind pressure and snow loading.

**1.07 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

**1.08 ACCESS TO SITE**

- .1 Provide and maintain access roads, sidewalk crossings as may be required for access to Work.

**1.09 PUBLIC TRAFFIC FLOW**

- .1 Provide and maintain barricades as required to perform Work and protect public.

**1.10 FIRE ROUTES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

**1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

- .1 Protect surrounding property from damage during performance of Work.
- .2 Be responsible for damage incurred.

**1.12 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment, including existing roof coverings, as indicated during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule three (3) days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**1.13 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 14 00 – Fluid Applied Membrane.
- .3 Section 07 27 60 – Air Barrier.
- .4 Section 07 61 00 – Sheet Metal Roofing.
- .5 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .6 Section 07 92 00 – Joint Sealants.
- .7 Section 08 50 00 – Windows.
- .8 Section 09 91 13 – Exterior Painting.

### **1.02 REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

### **1.03 PRODUCTS, MATERIALS AND EQUIPMENT**

- .1 Products, materials, equipment and articles incorporated in Work shall be NEW, not damaged or defective, and of best quality for purpose intended and compatible with the specifications. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Use products of one (1) manufacturer for material and equipment of the same type or classification unless otherwise specified.
- .3 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .4 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions. Departmental Representative will designate which document is to be followed.

**1.04 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items.
- .2 If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .3 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

**1.05 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store sheet materials on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

**1.06 TRANSPORTATION**

- .1 Pay costs of transportation of products required in performance of Work.

**1.07 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

**1.08 QUALITY OF WORK**

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

**1.09 CO-ORDINATION**

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

**1.10 REMEDIAL WORK**

- .1 Refer to Section 01 73 00 – Execution.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

**1.11 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate, unless noted otherwise.
- .2 Inform Consultant of conflicting installation. Install as directed, without additional cost to Owner.

**1.12 FASTENINGS**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Provide metal fastenings and accessories in the same texture, colour and finish as base metal in which they occur.
  - .1 Prevent electrolytic action between dissimilar metals.
  - .2 Use non-corrosive fasteners, anchors and spacers for securing exterior work unless stainless steel or other material is specifically requested in technical specification sections.
  - .3 Use heavy hexagon heads, semi-finished unless otherwise specified.
  - .4 Bolts may not project more than 1 diameter beyond bolts.
- .3 Types of washers as follows:
  - .1 Soft neoprene washers: use for exposed fastening of exterior metal panels.
- .4 Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.
- .5 Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from site.
- .6 Store products in accordance with suppliers' instructions.

- .7 Touch up damaged factory finished surfaces according to manufacturer's recommendations and to Departmental Representative's satisfaction.
  - .1 Use primer or enamel to match original.
  - .2 Do not paint over nameplates.
- .8 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .9 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .10 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

#### **1.13 PROTECTION OF EXISTING BUILDING AND WORK IN PROGRESS**

- .1 Protect existing building components and finishes (including glazing and roof finishes) from damage. Repair damaged components and finishes according to Departmental Representative's specifications, to better condition.
- .2 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

#### **1.14 CONTRACTOR'S OPTIONS FOR SELECTION OF PRODUCTS FOR TENDERING**

- .1 Products are specified by 'Prescriptive' specifications: select any product meeting or exceeding specifications.
- .2 Products specified under "Acceptable Products": select any one of the indicated manufacturers or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.
- .3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.
- .4 Products specified to meet particular design requirements or to match existing materials: use only material specified Acceptable Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with Section 01 11 55 – General Conditions.
- .5 When products are specified by a referenced standard or by or performance specifications, upon request of Departmental Representative obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements at no cost to Departmental Representative.
- .6 Provide cost saving breakout in bid form for alternate material or system if incorporated.

#### **1.15 SUBSTITUTION AFTER CONTRACT AWARD**

- .1 No substitutions are permitted without prior written approval of the Departmental Representative.
- .2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution, including cut sheets and technical data.

- .3 Proposals will be considered by the Departmental Representative if:
  - .1 products selected by tenderer from those specified are not available;
  - .2 delivery date of products selected from those specified would unduly delay completion of Contract, or
  - .3 alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
- .4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.
- .5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative and the Contract price will be reduced accordingly.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

## **3 EXECUTION**

### **3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**





## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 61 00 – Sheet Metal Roofing.
- .4 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .5 Section 07 92 00 – Joint Sealants.
- .6 Section 08 50 00 – Windows.
- .7 Section 09 91 13 – Exterior Painting.

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 Integrity of weather-exposed or moisture-resistant elements.
  - .3 Efficiency, maintenance, or safety of operational elements.
  - .4 Visual qualities of sight-exposed elements.
  - .5 Work of Departmental Representative or separate contractor.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives to cutting and patching.
  - .6 Effect on Work of Departmental Representative or separate contractor.
  - .7 Written permission of affected separate contractor.
  - .8 Date and time work will be executed.

### **1.03 MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

### **1.04 PREPARATION**

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work and review existing conditions with Departmental Representative.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work.

**1.05 EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of existing mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ Departmental Representative approved installer to remove, relocate and reinstall existing security cameras and communication antennae.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

**1.06 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

**1 GENERAL**

**1.01 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain and pay for permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling.
- .7 Dispose of waste materials and debris off site.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate building systems.

**1.02 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors.
- .5 Vacuum clean behind grilles, louvres and screens.
- .6 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .7 Broom clean and wash exterior walks, steps and surfaces; where used for project Work.
- .8 Remove dirt and other disfiguration from exterior surfaces of Work.

- .9 Clean equipment and fixtures to sanitary condition; clean glazing and frames where adjacent to work.

**1.03 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Refer to technical sections for waste management and disposal.

### **1.02 WASTE MANAGEMENT GOALS**

- .1 Prior to start of Work, conduct meeting with Departmental Representative to review and discuss PWGSC's Waste Management Plan and Goals.

### **1.03 DEFINITIONS**

- .1 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .2 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .3 Reuse: repeated use of product in same form but not necessarily for same purpose.  
Reuse includes:
  - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including pallets or unused products to vendors.
- .4 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

### **1.04 MATERIALS SOURCE SEPARATION**

- .1 Before project start-up, prepare area and provide separate containers for re-usable and recyclable materials of the following:
  - .1 Windows.
  - .2 Air Barrier.
  - .3 Metals.
  - .4 Sealants and materials.
  - .5 Other materials as indicated in technical sections.
- .2 Locate containers in locations to facilitate deposit of materials without hindering daily operations as directed by Departmental Representative.
- .3 Locate separated materials in areas which minimize damage.

### **1.05 STORAGE, HANDLING AND PROTECTION**

- .1 Handle waste materials not re-used, salvaged or recycled in accordance with appropriate regulations and codes.
- .2 Materials in separated condition: collect, handle, store on site where directed and transport off-site to an approved and authorized recycling facility.
- .3 Materials must immediately be separated into required categories for re-use or recycling.

- .4 Unless specified otherwise, materials for removal become Contractor's property.
- .5 Separate non-salvageable materials for recycling where applicable recycling facility exists. Transport and deliver non-salvageable items to licensed recycling and disposal facilities.
- .6 Protect structural components not removed for demolition from movement or damage.
- .7 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .8 Protect surface drainage, mechanical and electrical from damage and blockage.
- .9 Separate and store materials produced during dismantling of structures in designated areas.
- .10 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.

#### **1.06 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

#### **1.07 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures as approved by Departmental Representative.

#### **1.08 SCHEDULING**

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

### **2 PRODUCTS**

#### **2.01 NOT USED**

- .1 Not Used.

### **3 EXECUTION**

#### **3.01 APPLICATION**

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

#### **3.02 CLEANING**

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.
- .3 Source separate materials to be reused/recycled into specified sort areas.

**END OF SECTION**





## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 07 27 60 – Air Barrier.
- .2 Section 07 61 00 – Sheet Metal Roofing.
- .3 Section 07 92 00 – Joint Sealants.
- .4 Section 08 50 00 – Windows.
- .5 Section 09 91 13 – Exterior Painting.

### **1.02 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
  - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2 Request Departmental Representative review.
  - .2 Departmental Representative's review:
    - .1 Departmental Representative and Contractor to review Work and identify defects and deficiencies.
    - .2 Contractor to correct Work as directed.
  - .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    - .1 Work: completed and reviewed for compliance with Contract Documents.
    - .2 Defects: corrected and deficiencies completed.
    - .3 Work: complete and ready for final review.
  - .4 Final Review:
    - .1 When completion tasks are done, request final review of Work by Departmental Representative.
    - .2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-review.

### **1.03 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
  - .1 Convene meeting one week prior to contract completion with Owner, Contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
    - .1 Verify Project requirements.
    - .2 Review manufacturer's installation instructions and warranty requirements.
  - .2 Departmental Representative to establish communication procedures for:
    - .1 Notifying construction warranty defects.
    - .2 Determine priorities for type of defects.
    - .3 Determine reasonable response time.
  - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
  - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

### **1.02 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Three (3) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, one (1) final hard copy and three (3) electronic copies of operating and maintenance manuals. Substantial completion will not be considered until this submission is completed.
- .3 Ensure spare parts, maintenance materials and special tools are new, neither damaged nor defective, and of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.
- .5 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

### **1.03 FORMAT – PROJECT RECORD DOCUMENTS**

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
  - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by Section numbers and sequence of the Table of Contents according to the contract documents Table of Contents.

- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages with drawing number and description visible.
- .9 Provide 1:1 scaled CAD files in dwg format on CD.

#### **1.04 CONTENTS - PROJECT RECORD DOCUMENTS**

- .1 Table of Contents (for each volume): provide the following:
  - .1 Title of project.
  - .2 Date of submission
  - .3 Names, addresses, telephone numbers and email addresses of Consultant, Contractor and Sub-Contractors with name of responsible parties.
  - .4 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
  - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

#### **1.05 AS -BUILT DOCUMENTS**

- .1 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
  - .1 Measured locations of internal utilities and appurtenances, reference to visible and accessible features of construction.
  - .2 Field changes of dimension and detail.
  - .3 Changes made by change orders.
  - .4 Change Orders and other modifications to Contract.
  - .5 Details not on original Contract drawings.
  - .6 References to related shop drawings and modifications.
- .2 Contract Specifications: legibly mark each item to record actual 'workmanship of construction', including:
  - .1 Manufacturer, trade name, and catalogue number of each 'Product/Material' actually installed, particularly optional items and substitute items.
  - .2 Changes made by addenda and change orders.
- .3 As-built information:
  - .1 Record changes in red ink as work progresses.
  - .2 Mark on 1 set of drawings, specifications and shop drawings at completion of project and, before final review, neatly transfer notations to second set.
  - .3 Submit all sets to Departmental Representative.

**1.06 EQUIPMENT AND SYSTEMS**

- .1 Include manufacturer's printed operation and maintenance instructions.
- .2 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .3 Additional requirements: as specified in individual specification sections.

**1.07 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
  - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

**1.08 WARRANTIES**

- .1 Submit for Consultant's preliminary review, copies of product warranties with project submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Separate each Document with index tab sheets keyed to Table of Contents listing.
- .3 List subcontractor, supplier and manufacturer with name, address and telephone number of responsible principal.
- .4 Obtain warranties and inspection reports executed in by subcontractors, suppliers, manufacturers and inspection agencies within 10 days after completion of applicable item of work.
- .5 Except for items put into use with the Departmental Representative's permission leave date of beginning of time of warranty until the date of substantial performance is determined.
- .6 Verify that documents are in proper form, contain full information and are notarized.
- .7 Co-execute submittals when required.
- .8 Retain warranties and bonds until time specified for submittal with Operating and Maintenance manual.
- .9 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.

**1.09 COMPLETION**

- .1 Submit a written certificate that the following have been performed:
  - .1 Work has been completed and reviewed for compliance with the Contract documents.

- .2 Defects have been corrected and deficiencies have been completed.
- .3 Work is complete and ready for final review.

**2 PRODUCTS**

**2.01 NOT USED**

- .1 Not Used.

**3 EXECUTION**

**3.01 NOT USED**

- .1 Not Used.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY**

- .1 Demolition work includes:
  - .1 removal and disposal of existing metal wall panels and roof cladding, air barrier, and flashings as indicated, including removal and reinstallation of existing soffit and glazing where required.
  - .2 removal and disposal of exterior wood windows as indicated.
  - .3 removal and refinishing of existing exterior doors, louvres and vents to match new flashing colour, as indicated.

### **1.02 REFERENCES**

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
  - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures and 01 74 21 - Construction/Demolition Waste Management Disposal.

### **1.04 SITE CONDITIONS**

- .1 If material resembling spray or trowel-applied asbestos or other designated substance be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
  - .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
- .2 Notify Departmental Representative before disrupting building access or services.

## **2 PRODUCTS**

### **2.01 NOT USED**

- .1 Not used.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Inspect building with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Photographic documentation – before commencing demolition of work submit electronic copies of colour digital photography in jpg format, standard resolution, from 4 viewpoint locations of each room. Identify each photograph with date, room number and viewpoint.
- .3 Locate and protect utilities. Preserve active utilities in operating condition.

- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
  - .1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.
  - .2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

### **3.02 PREPARATION**

- .1 Protection of In-Place Conditions:
  - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building and finishes to remain.
  - .2 Protect existing roofing as indicated.
  - .3 Keep noise, dust, and inconvenience to occupants to minimum.
  - .4 Protect building systems, services and equipment.
  - .5 Provide temporary dust screens, covers, railings, supports and other protection as required.
  - .6 Do Work in accordance with Section 01 35 33 - Health and Safety Requirements.
  - .7 Remove, relocate temporarily and reinstall parts of existing buildings as indicated to maintain operation and permit remedial construction. Items include:
    - .1 Existing security cameras, communication antennas, air source heat pump and public telephone to be removed temporarily relocated and must remain operational and then reinstalled after completion of remedial work by Departmental Representative approved contractor in accordance with Section 01 14 00 – Work Restrictions.
- .2 Demolition/Removal:
  - .1 Remove items as indicated.
  - .2 Trim edges of partially demolished building elements to tolerances as defined by Departmental Representative to suit future use.

### **3.03 REINSTALLATION**

- .1 Reinstall elements that have been removed for remediation work once remediated work has been completed and reviewed by Departmental Representative. Departmental Representative approved contractor to reinstall removed components.
- .2 Install to original position and make good any damaged elements to satisfaction of Departmental Representative.
- .3 Upon completion of installation, notify Departmental Representative for review of completed work.

### **3.04 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.



- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at locally available authorized facility.

**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 02 41 99 – Demolition for Minor Works.

### **1.02 REFERENCES**

- .1 American Conference of Governmental Industrial Hygienists (ACGIH), Bioaerosols Assessment and Control 1999.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .3 New York City Department of Health - Bureau of Environmental and Occupational Disease Epidemiology's Guidelines on the Assessment and Remediation of Fungi in Indoor Environment 2000.
- .4 United States Department of Labor Occupational Safety and Health Administration (OSHA)
  - .1 29 CFR 1910.134 - Respiratory Protection.
  - .2 29 CFR 1910.1200 - Hazard Communication.
- .5 United States Environmental Protection Agency (EPA), Mould Remediation in Schools and Commercial Buildings, 2001.

### **1.03 DEFINITIONS**

- .1 Authorized Visitors: Engineers, Consultants or designated representatives and representatives of regulatory agencies.
- .2 Cleaning solution: detergent solution.
- .3 Competent person: individuals, Departmental Representative who can demonstrate that mould remediation training has been obtained, is capable of identifying existing microbial hazards in workplace and selecting appropriate control strategy for microbial exposure.
- .4 Contractor: remediation contractor providing demolition and removal services as defined in specification.
- .5 Fibre Reinforced Polyethylene Sheet: rip-proof fibre reinforced polyethylene sheeting with added fibre reinforced adhesive tape along edges.
- .6 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .7 HVAC: heating ventilating and air-conditioning systems which serve occupied areas. Includes but is not limited to air handling units, duct work, terminal boxes and vents.
- .8 Mould contaminated work area: specific area or location where actual work is being performed or other areas of facility where it has been determined that it may be hazardous to public health as result of mould remediation.

- .9 Occupied Area: areas of building or work site that is outside mould contaminated work area.
- .10 PPE: Personnel Protection Equipment.
- .11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have a minimum of six litres capacity for work.

#### **1.04 REGULATORY REQUIREMENTS**

- .1 Comply with regulations in effect at time work is performed. In case of conflict among these requirements or with these specifications the more stringent requirement applies. If no regulations exist, follow guidelines most widely accepted by recognized professional organizations such as occupational hygienists, health professionals or environmental engineers as listed in paragraph 1.02 References.

#### **1.05 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit Provincial and/or local requirements for Notice of Project form.
- .2 Submit proof of Contractors Liability Insurance for dealing with hazardous materials.
- .3 Submit Workers Compensation Board status and transcription of insurance.
- .4 Submit proof of attendance in form of certificate that supervisory personnel have trained in asbestos and/or mould remediation course, approved by Departmental Representative. Minimum of one supervisor for every ten trained workers.

#### **1.06 CLOSEOUT SUBMITTALS**

- .1 Maintain general log to provide permanent record of project. Maintain logs and other required documentation as part of permanent project file.
- .2 Daily log must be available for inspection upon request by Departmental Representative.
- .3 Visitor log must be available for inspection upon request by Departmental Representative.

#### **1.07 INSTRUCTION AND TRAINING**

- .1 Before commencing work, provide Departmental Representative proof that worker had instruction and training in potential health hazards of mould exposure, handling of hazardous materials, in personal hygiene including protective clothing, in entry and exit from Mould Contaminated Work Area, and in use of disposal procedures including building materials. This training can be performed as part of a program to comply with requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
- .2 Instruction and training related to respirators includes at minimum:
  - .1 Fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by designated construction safety advisor.

## **1.08 WORKER PROTECTION**

- .1 Respirators suitable for protection against mould and acceptable to Provincial Authority having jurisdiction Non-powered disposable filter-type respirator of type N95 OSHA 29CFR 1910.134 full-face air purifying respirators (APR) equipped with replaceable HEPA filter cartridges, personally issued to work and marked as to efficiency and purpose.
- .2 Gloves and eye protection.
- .3 Disposable paper coveralls including head covering.
- .4 Ensure that no person required to enter Mould Contaminated Work Area has facial hair that affects seal between respirator and face.
- .5 Eating, drinking and chewing are not permitted in Mould Contaminated Work Area.
- .6 Before leaving Mould Contaminated Work Area, dispose of protective clothing as waste as specified.
- .7 Ensure workers wash hands and face after leaving Mould Contaminated Work Area. Facilities for washing are to be provided by Contractor.

## **1.09 VISITOR PROTECTION**

- .1 Protective clothing and approved respirators Non-powered disposable filter-type respirator of type N95 OSHA 29CFR 1910.134 full face to be worn by Authorized Visitors to Mould Contaminated Work Area.
- .2 Instruct Authorized Visitors in use of protective clothing, respirators, and procedures.
- .3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Mould contaminated work area.

## **1.10 HOURS OF WORK**

- .1 Typical work schedule – perform work during normal working hours with the exception of work on the east elevation adjacent to north-bound traffic lane which must be completed after hours. After hours escort will be required.
- .2 Be available to work continuously from beginning to end of project.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Drop Sheets: fibre reinforced polyethylene 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Disposal bags: dust-tight 0.15 mm clear polyethylene waste bags.
- .3 Wetting Agent: water to mist mould-containing material.

- .4 Fibre reinforced adhesive tape: used in sealing joints of fibre reinforced polyethylene sheets and for attachment of fibre reinforced polyethylene sheet to finished and unfinished surfaces. Fibre reinforced adhesive tape must be capable of adhering under both dry and wet conditions.
- .5 Materials: provide materials such as fibre reinforced polyethylene sheeting, lumber, nails and hardware necessary to construct and dismantle barriers that isolate Mould Contaminated Work Area.

## **2.02 TOOLS AND EQUIPMENT**

- .1 Tools and equipment: suitable for use with microbial contamination and must be able to withstand de-contamination.
- .2 Personnel protective equipment (protective clothing, personal respiratory filter cartridges, HEPA air filters, etc.): to be provided in sufficient quantities for duration of project.
- .3 Vacuum cleaners: equipped with HEPA filters.
- .4 Ladders and/or scaffolds: adequate length, strength and sufficient quantity to support work schedule.
- .5 Exhaust air fan systems: equipped with HEPA filters and be capable of providing sufficient exhaust air to create a minimum pressure differential of 5 to 7 Pa and to allow sufficient flow of air through area.

## **3 EXECUTION**

### **3.01 PREPARATION OF MOULD CONTAMINATED WORK AREA**

- .1 Mould Contaminated Work Area and areas adjacent and around area to be unoccupied. Vacating is recommended in case of infants (less than 12 months old), elderly people, persons having undergone recent surgery, immune suppressed people or people with chronic inflammatory lung diseases.
- .2 One supervisor for every ten trained workers is required.
- .3 Approved supervisor must remain within Mould Contaminated Work Area at all times during disturbance, removal or other handling of mould-contaminated materials.
- .4 Maintain existing HVAC systems during remediation work to prevent contamination and dust dispersal to other areas of building.
- .5 Seal off windows, doorways, skylights, ducts and other openings between Mould Contaminated Work Area and uncontaminated areas outside Mould Contaminated Work Area with fibre reinforced polyethylene sheeting and fibre reinforced adhesive tape to minimize migration of contaminants to other parts of building.
- .6 Clean fixed objects within proposed Mould Contaminated Work Area using HEPA filtered vacuum, damp wipe surfaces and cover with one layer of fibre reinforced polyethylene sheeting securely fastened with fibre reinforced adhesive tape.
- .7 Remove visible dust from surfaces in Mould Contaminated Work Area where dust is likely to be disturbed during course of mould remediation work. Use HEPA vacuum and damp wipe the area.

- .8 Do not use compressed air to clean up or remove dust from any surface.
- .9 Erect critical barriers around perimeter of Mould Contaminated Work Area before remediation using single layer of 0.15 mm fibre reinforced polyethylene sheeting extending from floor slab, roof or grade as close as possible to roof above or soffit. Seal gaps due to ductwork, piping conduits with layer of 0.15 mm fibre reinforced polyethylene sheeting. For larger areas, a steel or wooden stud frame can be erected and fibre reinforced polyethylene sheeting attached to it.
- .10 Use 0.15 mm fibre reinforced drop sheets tightly sealed with fibre reinforced adhesive tape over flooring in work area[s].
- .11 Ensure that containment area is under negative pressure. Use HEPA filtered fan exhausted outside of Mould Contaminated Work Area to create negative pressure.
- .12 In smaller easily contained areas, use HEPA vacuum cleaner nozzle within enclosure. Locate vacuum canister outside enclosure.
- .13 Before beginning work, at each access to contaminated work area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used : 'CAUTION MOULD HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING MOULD DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.
- .14 Do not begin remediation work until barriers are inspected and authorization is given by Departmental Representative.

### **3.02 MICROBIAL REMOVAL/REMEDICATION**

- .1 If remediation procedures are expected to generate dust or visible concentration of fungi is heavy (blanket as opposed to patchy coverage), then it is recommended that Maximum Precautions Section 02 85 00.03 for Mould Remediation be followed using full containment.
- .2 Use sprayer (low-velocity, fine-mist) to mist (not wet) materials containing mould to be cut. Perform work to reduce dust creation to lowest levels practicable.
- .3 Non-porous materials can be cleaned using the cleaning solution and reused.
- .4 Porous materials, exterior gypsum wallboard sheathing with mould contamination or dampness is to be removed, discarded and replaced.
- .5 Dispose of contaminated building materials as specified.
- .6 During mould removal/remediation, should Departmental Representative suspect contamination of areas outside enclosed Mould Contaminated Work Area, contractor to stop removal/remediation work and immediately decontaminate affected areas. Eliminate causes of such contamination. Prohibit unprotected individuals from entering these contaminated areas until air and swab sampling and a visual inspection determines areas are free from contamination.
- .7 Notify Departmental Representative of mould contaminated material discovered during work and not apparent from drawings, specifications or report pertaining to work. Do not disturb such material pending instructions from Departmental Representative.

### **3.03 REPAIR AND CLEAN-UP**

- .1 During Mould Removal/Remediation and immediately after completion of mould removal/remediation, clean enclosure starting within top of enclosure and working down to floor. Clean areas using HEPA vacuum and by damp mopping with cleaning solution.
- .2 Perform restoration of designated Mould Contaminated Work Area as specified.
- .3 Leave areas dry and visibly free from contamination, debris and dust.
- .4 After clean-up within barrier dismantle, barrier and dispose of as specified.
- .5 Perform final thorough clean-up of work areas and adjacent areas affected by work using HEPA vacuum and damp mopping with cleaning solution.

### **3.04 WASTE DISPOSAL**

- .1 Place debris and mould-containing waste in doubled-bagged dust-tight 0.15 mm fibre reinforced clear polyethylene waste bags. Treat drop sheets and disposable protective clothing as waste; fold these items to contain dust, and place in plastic bags. Securely seal bags.
- .2 Cover large items that have heavy mould growth with fibre reinforced polyethylene sheeting and sealed with fibre reinforced adhesive tape before they are removed from enclosure.
- .3 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum prior to removal from Mould Contaminated Work Area.
- .4 Remove waste bags from site and dispose at authorized facilities.

### **3.05 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Return objects moved to temporary locations to their location. Ensure objects are cleaned before been moved into cleaned areas.
- .2 Remount objects removed to former positions.
- .3 Re-establish mechanical and electrical systems to proper working order. Install new filters into HVAC systems serving the affected area as part of remediation.

### **3.06 FINAL CLEARANCE**

- .1 Departmental Representative to conduct thorough visual inspection to detect visible accumulations of dust or bulk materials remaining in work area. Should dust, debris, microbial contamination, or residue be detected repeat cleaning, until area meets approval.
- .2 Before and after work, take air samples inside of Mould Contaminated Work Area enclosures in accordance with recommended guidelines.
- .3 Perform final air monitoring of Mould Contaminated Work Area provided area has passed visual inspection and an appropriate settling period of 12 hours has passed. If air monitoring results are deemed unacceptable by Departmental Representative, areas are to be re-cleaned with HEPA vacuum and damp wiped until levels are found to be acceptable by Departmental Representative.



**END OF SECTION**



## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 61 00 – Sheet Metal Roofing.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 08 50 00 – Windows.

### **1.02 REFERENCES**

- .1 CSA International
  - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
  - .3 CSA O141-05(R2009), Softwood Lumber.
  - .4 CSA O151-09, Canadian Softwood Plywood.
- .2 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2010.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

### **1.04 QUALITY ASSURANCE**

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood construction sheathing identification: by grademark in accordance with applicable CSA standards.

### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, banding, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CAN/CSA-O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, rough bucks, fascia backing:
  - .1 S2S is acceptable.
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
  - .4 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
  - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
    - .1 Urea-formaldehyde free.
  - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
    - .1 Urea-formaldehyde free.
- .4 Wood Preservative:
  - .1 Surface-applied wood preservative: clear coloured, copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.
  - .2 Pentachlorophenol use is restricted to building components that are in ground contact and subject to decay or insect attack only. Where used, pentachlorophenol-treated wood must be covered with two coats of an appropriate sealer.
  - .3 Structures built with wood treated with pentachlorophenol and inorganic arsenicals must not be used for storing food nor should the wood come in contact with drinking water.
- .5 Primers and Paints: in accordance with manufacturer's recommendations for surface conditions:
  - .1 Primer: VOC limit 100 g/L maximum.
  - .2 Paint: VOC limit 50 g/L maximum.

### **2.02 ACCESSORIES**

- .1 Fasteners: to CAN/CSA-G164, for exterior work and pressure- preservative treated lumber.
- .2 Nails, spikes and staples: to CSA B111.
- .3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

#### **3.02 PREPARATION**

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .4 Treat material as follows:
  - .1 Fascia backing, curbs and nailers.
  - .2 Wood furring for rainscreen cavity for new exterior wall finish.

#### **3.03 INSTALLATION**

- .1 Comply with requirements of NBC, supplemented by the following paragraphs.
- .2 Install furring and blocking as required to space-out and support facings, fascia, soffit, siding and other work as required.
- .3 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .5 Install wood fascia backing, nailers, and other wood supports as required and secure using galvanized fasteners.
- .6 Install wood backing, dressed, tapered and recessed slightly below top surface of roof parapet.
- .7 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .8 Countersink bolts where necessary to provide clearance for other work.

#### **3.04 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 08 99 – Rough Carpentry for Minor Works.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Section 08 50 00 – Windows.
- .4 Section 09 91 13 – Exterior Painting (wood siding).

### **1.02 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI/HPVA HP-1-10, American National Standard for Hardwood and Decorative Plywood.
- .2 ASTM International
  - .1 ASTM A 123/A 123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .3 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-11.3-M87, Hardboard.
- .4 CSA International
  - .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O121-08, Douglas Fir Plywood.
- .5 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2010.
- .6 Western Red Cedar Lumber Association (WRCLA).

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for plywood and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety Requirements.
- .3 Shop Drawings:
  - .1 Submit drawings.
  - .2 Indicate details of construction, profiles, jointing, fastening and other related details.
  - .3 Indicate materials, thicknesses, finishes and hardware.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate 300 mm long samples.

- .4 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.

#### **1.04 QUALITY ASSURANCE**

- .1 Lumber by grade stamp of agency certified by Canadian Lumber Standards Accreditation Board (CLSAB).
- .2 Plywood panels to CSA and ANSI standards.
- .3 Western Red Cedar Lumber Association (WRCLA) standards.

#### **1.05 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical exterior wall panel, full height by 1.5m wide, incorporating adjacent to openings, building corner condition, and junction with soffit; illustrating materials interface and seals.
- .3 Locate where directed by Departmental Representative.
- .4 Mock-up may remain as part of Work once approved.
- .5 Submit colour photos of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.

#### **1.06 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect wood products from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

#### **1.07 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide manufacturer's standard 15 year warranty for Easytrim reveals under provisions of Section 01 78 00 - Closeout Submittals. Warranty to be executed by authorized company official.
- .3 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.



## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Softwood lumber: S4S, moisture content 19% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
  - .3 Machine stress-rated lumber is acceptable.
  - .4 Western Red Cedar lumber, tongue and groove siding, v-grooved on one side (EV1S) WRCLA1, sizes as indicated, finish as indicated, moisture content 15% or less in accordance:
    - .1 Western Red Cedar Lumber Association (WRCLA).
    - .2 Grade: A, clear as per NLGA paragraph 201a, moisture content as specified.

### **2.02 ACCESSORIES**

- .1 Siding Trim - aluminum trim reveals: made to 6063-T5 anodized aluminum. Sizes, profiles and colour finish as indicated.
  - .1 Acceptable manufacturer: Easytrim Reveals – EZ3 Lap, EZ4 Lap 'Z', EZ7 Lap, EZ8 Lap, EZ10 Lap 'B', EZ sizes, profiles and colour finish as indicated. Fasteners as recommended by manufacturer.
  - .2 Or pre-approved alternative.
- .2 Starter Transition Trim – vinyl starter transition trim to base of rainscreen, size:19mm
  - .1 Acceptable manufacturer: Raindog Building Products.
  - .2 Or pre-approved alternative.
- .3 Nails and staples: to CSA B111; galvanized to ASTM A 123/A 123M for exterior work and for treated lumber; stainless steel finish elsewhere.
- .4 Wood screws: stainless steel type and size to suit application.
- .5 Adhesive and Sealants: in accordance with Section 07 92 00 - Joint Sealants.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Verification of Conditions: verify conditions of existing substrates previously revealed during demolition work are acceptable for wood products installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.02 INSTALLATION**

- .1 Do siding installation to Western Red Cedar Lumber Association (WRCLA) 'How to install Red Cedar Siding', 2007.

- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Form joints to conceal shrinkage.

### **3.03 CONSTRUCTION**

- .1 Fastening:
  - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
  - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
  - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug to match material being secured.
  - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.
- .2 Standing and running trim:
  - .1 Install window trim in single lengths without splicing.
- .3 Siding Trim:
  - .1 Install reveal trim as indicated and in accordance with manufacturer's installation instructions.
- .4 Siding:
  - .1 Install wood siding in reveals, fastening upper groove using concealed fasteners.

### **3.04 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.05 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by finish carpentry installation.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 08 99 – Rough Carpentry for Minor Works.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealants.

### **1.02 REFERENCES**

- .1 ASTM International (ASTM)
  - .1 ASTM D412 - 06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.
  - .2 Low-Alloy with Improved Formability, and Ultra-High Strength.
  - .3 ASTM D2240 - 05(2010) Standard Test Method for Rubber Property—Durometer Hardness.
  - .4 ASTM D5147 / D5147M - 11a, Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material.
- .2 International Organization for Standardization (ISO)
  - .1 ISO 9001 – Quality Management Systems, 2008.
  - .2 ISO 14001 – Environmental Management Systems, 2004.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 33 - Health and Safety Requirements.
- .3 Samples:
  - .1 Submit for review duplicate samples.

### **1.04 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up to show location, size, shape and depth of joints complete with primer, membrane/fleece, final coat and sealant. Locate where directed by Departmental Representative.
- .3 Mock-up may remain as part of Work once approved.
- .4 Submit colour photos of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.

### **1.05 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address. The containers must display the lot number and date of manufacture of the product.
- .3 The materials delivered will be carefully stored in a cool, dry area away from open flames and appropriately protected according to the manufacturer's recommendations.

### **1.06 QUALITY ASSURANCE**

- .1 Contractor Qualifications:
  - .1 Coating work shall be performed only by skilled applicators, operating all adequate and necessary equipment to execute such work in accordance with the manufacturer's recommendations and recognized standards.
  - .2 Applicators must be able to provide an applicators card showing proof of training by manufacturer.
- .2 Manufacturer's Representative:
  - .1 Manufacturer may delegate a representative to visit the work site at commencement of work.
  - .2 Permit and facilitate access to the site by the manufacturer's representative sited above.

### **1.07 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Manufacturer's Warranty: Submit, for Departmental Representative's acceptance, manufacturer's standard warranty document executed by authorized company official.
- .3 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Primer: in accordance with ISO 9001 and ISO 14001 certifications. A high performance two-component rapid curing PMMA acrylic primer formulation used in cold liquid-applied membrane system applications.
  - .1 Acceptable Product:
    - .1 Alsan RS 276 Primer.
    - .2 Or pre-approved alternative.
- .2 Membrane: in accordance with ASTM D5147, ASTM D412, ASTM D2240 and ASTM D5147. A two-component (PMMA) methyl methacrylate-based liquid membrane. Combined with fleece fabric to form a monolithic, self-flashing and self-adhering reinforced field membrane designed for use in interior and exterior new, tear-off and recovery applications.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS 230 Flash.

- .1 Color: standard colour from manufacturer.
    - .2 Or pre-approved alternative.
- .3 Catalyst: a reactive agent based on dibenzoyl peroxide used to induce curing of all resin products during membrane application.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS Catalyst Powder.
      - .1 Color: White Powder.
      - .2 Or pre-approved alternative.
- .4 Fleece: a non-woven, needle-punched polyester fabric used as fabric reinforcement in two-component cold liquid-applied membrane systems to improve tear strength, puncture resistance, flexural fatigue and crack bridging capabilities while maintaining membrane uniformity.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS Fleece.
      - .1 Color: White Fabric.
      - .2 Or pre-approved alternative.
- .5 Paste: paste used for filling in small cracks, depressions and voids in a substrate.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS Paste.
    - .2 Or pre-approved alternative.
- .6 Micro-fiber: enhanced flashing paste for waterproofing of small and difficult penetrations where reinforced membrane is not possible to apply.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS Detailer.
    - .2 Or pre-approved alternative.
- .7 Finish coat: A high performance two-component (PMMA) methyl methacrylate-based, rapid-curing, flexible acrylic coloured pigmented finish resin formulation used in cold liquid-applied membrane system applications.
  - .1 Acceptable Product:
    - .1 Soprema: Alsan RS 288 Finish
      - .1 Color: Beige from standard colour range.
      - .2 Or pre-approved alternative.

### 3 EXECUTION

#### 3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.02 SURFACE PREPARATION**

- .1 Mask off area to be membrane.
- .2 Sand painted surface by hand with 50 grit sandpaper prior to applying primer. Ensure that the prepared surface is clean, dry and free from dust, laitance, grease, oil and any other contaminants.

### **3.03 PRIMER APPLICATION**

- .1 Mask off area to be primed.
- .2 Using a slow-speed mechanical mixer, thoroughly mix the entire container of resin for two minutes prior to use. Catalyze only the amount of material that can be applied within 15 - 20 minutes. To activate 10 kg can, add two packets of Catalyst and stir for two minutes using mixer.

### **3.04 MEMBRANE APPLICATION**

- .1 Mask off area to be primed.
- .2 Using a slow-speed mechanical mixer, thoroughly mix the entire container of resin for two minutes prior to use. Catalyze only the amount of material that can be applied within 15-20 minutes. To activate 12 kg can, add three packets of Catalyst and stir for two minutes using mixer. Apply Flash to clean, dry and prepared substrate using manufacturer approved rollers. The resin should be spread evenly onto the surface. Fleece is laid into wet membrane product, and all wrinkles and air bubbles are rolled out of the reinforcement. Apply another layer of Flash onto reinforcement in order to assure full saturation. Second layer of Flash should be applied while the initial layer of Flash is still wet in order to ensure proper curing.
- .3 Fleece should be pre-cut prior to activation of membrane. Fleece reinforcement should extend five centimeters out onto the field and a minimum of 20 centimeters up vertical elements.
- .4 All material must be from the same batch. Order ample material to complete the project to ensure colour consistency.
- .5 Final thickness of membrane to be minimum of 3mm and no greater than 4 mm.

### **3.05 FINISH COAT**

- .1 Stir contents of the tub thoroughly, then add the catalyst while stirring at slow speed and mix for 2 minutes. Ensure that the material on the base and sides is mixed in.
- .2 When work is interrupted or completed the tools must be cleaned thoroughly with manufacturer's recommended Cleaning Agent within the pot life (approx. 15 minutes) of the product.

### **3.06 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**3.07 FIELD QUALITY CONTROL**

- .1 Monitor and report installation procedures.

**END OF SECTION**





## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 61 00 – Sheet Metal Roofing.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealants.
- .5 Section 08 50 00 – Windows.

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM):
  - .1 ASTM D882-12 - Test Method for Tensile Properties of Thin Plastic Sheeting.
  - .2 ASTM E84-12, Standard Test Method for Surface Burning Characteristics of Building Materials.
  - .3 ASTM E96/E96M-12, Standard Test Methods for Water Vapor Transmission of Materials; Compliant with Procedure B (Water Method) for interior to exterior testing.
  - .4 ASTM E283-04(2012) – Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - .5 ASTM E 1186-03-2009, Standard Practices for Air Leakage Site Detection in Building Envelope and Air Retarder Systems.
  - .6 ASTM E2178-11 Standard Test Method for Air Permeance of Building Materials.
- .2 Canadian Construction Materials Centre (CCMC):
  - .1 CCMC Technical Guide 07193 Sheathing, Membrane, Breather Type.

### **1.03 PERFORMANCE REQUIREMENTS**

- .1 Select and install wall components and assemblies to resist air leakage caused by static and dynamic air pressure across exterior wall and soffits, including windows, doors, and other interruptions to integrity of wall systems; to maximum air leakage rate of 0.02 L/s.m2 when subjected to pressure differential of 75 Pa as measured in accordance with CAN/ULC-S741.
- .2 Provide continuity of air barrier materials and assemblies in conjunction with materials described in Section 07 92 00 - Joint Sealants.

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's installation instructions, printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit WHMIS MSDS - Material Safety Data Sheets.

- .3 Shop drawings: submit drawings.
  - .1 Provide drawings showing relationship of membrane to:
    - .1 Sheathing.
    - .2 Soffit, sill and frame conditions.
    - .3 Adjacent to existing openings.
    - .4 Pipe, conduit and duct penetrations.
- .4 Samples:
  - .1 Submit duplicate 300 x 300 mm samples of each type of barrier.
  - .2 Tapes (single and double-sided).
  - .3 Fasteners, clips, strapping, sealants.

#### **1.05 QUALITY ASSURANCE**

- .1 Ensure all work is performed in accordance with NBC and manufacturer's instructions.
- .2 Obtain all breathable underlayment through one source from a single manufacturer.
  - .1 Manufacturer to have experienced in-house technical and field observation personnel qualified to provide technical support.
- .3 Ensure all work is performed in accordance with NBC and manufacturer's instructions.

#### **1.06 MOCK-UP**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct typical exterior wall panel, full height by 1.5m wide, and roof panel by 3m wide x length of roof incorporating adjacent to openings, building corner condition, and junction with soffit; illustrating materials interface and seals.
- .3 Locate where directed by Departmental Representative.
- .4 Mock-up may remain as part of Work once approved.
- .5 Submit colour photos of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions. Materials are to be delivered in original containers with seals unbroken, wrapped and labeled with manufacturer's name and product name.

#### **1.08 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.

## **1.09 SEQUENCING**

- .1 Sequence work to permit installation of materials in conjunction with related materials and seals.

## **1.10 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide manufacturer's standard 20 year warranty under provisions of Section 01 78 00 - Closeout Submittals. Warranty to be executed by authorized company official.
- .3 Warranty: include coverage of installed sheet materials which:
  - .1 Fail to achieve air tight and watertight seal.
  - .2 Exhibit loss of adhesion or cohesion.
  - .3 Do not cure.
- .4 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Materials: triple layer sheet membrane of front and back carrier sheets with a middle layer of spun-bonded polypropylene fabric with micro-porous film laminate and acrylic vapour permeable self-adhesive as required to achieve specified performance criteria; functionally compatible with adjacent materials and components and in accordance with ASTM D882, ASTM D3330, ASTM E-84, ASTM E-96 (Method B), ASTM E-2178 and ASTM E-2357.05.
  - .1 Acceptable manufacturer:
    - .1 Wall assembly:
      - .1 VaproShield LLC, WrapShieldSA (Self-Adhered), 1500mm wide, .66mm thick, colour: orange.
      - .2 Or pre-approved alternative.
    - .2 Roof assembly:
      - .3 VaproShield LLC, SlopeShieldSA (Self-Adhered), 1500mm wide, .51mm thick.
      - .4 Or pre-approved alternative.
- .2 Accessories:
  - .1 PVC louvre vents, 50mm round, white with integrated insect screens.

## **3 EXECUTION**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.02 EXAMINATION**

- .1 Verify that surfaces and conditions are ready to accept the Work of this section. Prepare substrate surfaces in accordance with manufacturer's instructions. Notify Departmental Representative in writing of any discrepancies. Commencement of Work or any parts thereof shall mean acceptance of the prepared substrates.
- .2 All surfaces must be sound, clean and free of oil, grease, dirt or other contaminants detrimental to installation. Fill voids and gaps in substrate to provide an even surface.

### **3.03 RAIN SCREEN CLADDING SYSTEMS**

- .1 Install PVC louvre vents 200mm from top and bottom of every stud cavity (centered vertically) space, complete with perimeter bead of sealant.

### **3.04 INSTALLATION**

- .1 Install barrier materials in accordance with manufacturer's instructions.
- .2 Install sealant materials in accordance with Section 07 92 00 – Joint Sealants and manufacturer's instructions.
- .3 Apply sealants within recommended application temperature ranges.

### **3.05 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

### **3.06 PROTECTION OF FINISHED WORK**

- .1 Protect finished work in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Protect wall areas covered with primary water-resistive vapor permeable air barrier from damage due to construction activities, high wind conditions, and extended exposure to inclement weather.
- .3 Do not permit adjacent work to damage work of this section.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 07 27 60 – Air Barriers.
- .2 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .3 Section 07 92 00 – Joint Sealants.

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A167-99(2009), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A240/A 240M-12a, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - .3 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .4 ASTM D523-08, Standard Test Method for Specular Gloss.
  - .5 ASTM D822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
- .2 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-S136-07(R2012), North American Specification for the Design of Cold-Formed Steel Structural Members.
- .3 Canadian Sheet Steel Building Institute Standards 10M and 20M.
- .4 Department of Justice Canada (Jus).
  - .1 Canadian Environmental Protection Act (CEPA), 1999.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .6 National Research Council Canada (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC).
  - .1 CCMC-2013, Registry of Product Evaluations.
- .7 National Building Code of Canada, 2010.
- .8 Transport Canada (TC).
  - .1 Transportation of Dangerous Goods Act (TDGA), 1992.

### **1.03 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver, store and handle materials in accordance with manufacturer's written instructions. Materials are to be delivered in original containers with seals unbroken, wrapped and labeled with manufacturer's name and product name.

#### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Roof installer shall have a minimum of 5 years documented experience of projects of similar scope.
- .2 Submit proof of manufacturer's CCMC Listing and listing number to Departmental Representative.
- .3 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence and cleaning procedures.
- .4 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Submit WHMIS MSDS - Material Safety Data Sheets.
- .6 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Shop drawings to illustrate arrangement of pre-finished roof sheet, including joints, types and locations of supports, fasteners, flashing, gutters, mitres and all metal components related to the roof installation.
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of British Columbia, Canada.
  - .2 Items required to meet snow, wind and seismic loads as required in accordance with Code requirements and shall be engineered by a Professional Engineer licensed to practise in the Province of British Columbia.
  - .3 Engage a Professional Engineer licensed to practise in the Province of British Columbia who shall submit Schedule S-B and carry out enough timely and regular inspections to:
    - .1 Review installation.
    - .2 Ensure that specified products are used.
    - .3 Ensure and certify installation meets the requirements of British Columbia Building Code, 2012 for design, construction and installation, notably for snow, wind and seismic loads.
  - .4 Said Engineer shall issue a "Letter of Certification" (Schedule S-C) stating that the components have been fabricated and installed in accordance with design and Code requirements.
  - .5 The cost of the above engineering, inspections and issuing required Schedules S-B and S-C shall be included as part of the cost for work under this Section.
- .7 Submit duplicate 300mm x 300mm samples of each coloured sheet material in accordance with Section 01 33 00 - Submittal Procedures.

#### **1.05 MOCK UP**

- .1 Submit mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Fabricate 1200 mm wide by full length sample roofing panel to include typical seam.
- .3 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .4 Locate where directed by Departmental Representative.

- .5 Submit colour photographs of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

#### **1.06 CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data of panel finishes for incorporation into manual specified in 01 78 00 - Closeout Submittals.

#### **1.07 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide 5 year RCABC Guarantee, including both workmanship and materials.
- .3 Provide manufacturer's standard 35 year warranty after date of Substantial Completion in accordance with Section 01 78 00 - Closeout Submittals. Warranty to be executed by authorized company official.
- .4 Warranty to include:
  - .1 12000 Series (Polyvinylidene Fluoride - PVDF) will not visibly (within 10 metres to the unaided naked eye) crack, chip, or peel (lose adhesion) for thirty-five (35) years from date of application. This does not include minute fracturing that may occur during the normal fabrication process. 12000 Series (Polyvinylidene Fluoride - PVDF) will not chalk in excess of a number eight (8) rating, in accordance with ASTM D-4214-98 method D659 at any time for thirty-five (35) years from date of installation (35.5 yrs from application); will not change colour more than five (5.0) Hunter  $\Delta E$  units as determined by ASTM method D-2244-02.
- .5 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.

#### **1.08 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Ensure emptied containers are sealed and stored safely.
- .7 Divert unused metal materials from landfill to authorized metal recycling facility.

- .8 Unused paint, caulking, and sealing compound materials must be disposed of at an official hazardous material collections site.
- .9 Unused paint, caulking, and sealing compound materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .10 Fold up metal banding, flatten and place in designated area for recycling.

## **2 PRODUCTS**

### **2.01 ROOF COMPONENTS**

- .1 Air barrier: in accordance with Section 07 27 60 – Air Barrier (roof).

### **2.02 ROOF SYSTEM**

- .1 Acceptable Manufacturer:
  - .1 Vicwest, Profile: Traditional 100-4, 0.635mm thick.
  - .2 Or pre-approved alternative.
- .2 Zinc coated steel sheet: to ASTM A 653/A 653M, structural quality Grade 230, commercial quality, with Z275 coating, PVDF pre-finish as indicated, 0.76 mm minimum base metal thickness.
- .3 Clip System:
  - .1 Thermally responsive clips to be fabricated from a minimum of 0.91 mm (.036") steel, with minimum Z275 galvanized coating designed to accommodate expansion and contraction of the roof sheet.
  - .2 Roof Fasteners: as recommended by manufacturer to resist wind uplift and sliding snow forces.
- .4 Snap Cap: to ASTM A 653/A 653M, structural quality Grade 230, commercial quality, with Z275 coating, PVDF pre-finish as indicated, 0.61 mm minimum base metal thickness, 25mm high x full length of roof panel, retained by panel clips.

### **2.03 FINISH & COLOUR**

- .1 Pre-painted Polyvinylidene Fluoride (PVDF) paint system.
- .2 Acceptable Manufacturer:
  - .1 Cascadia Metals.
    - .1 Colour: weathered zinc, CM12-2006, 12000 series.
  - .2 Or pre-approved alternative.

### **2.04 ACCESSORIES**

- .1 Flashings: in accordance with Section 07 62 00 – Sheet Metal Flashing and Trims.
- .2 Closures: foam and metal closures to suit profiles selected, to manufacturer's recommendations.
- .3 Underlay: self-adhered air barrier membrane.



- .4 Sealant: as recommended by manufacturer and in accordance to Section 07 92 00 - Joint Sealing.
- .5 Trims: as recommended by manufacturer.
- .6 Cleats: of same material, and temper as sheet metal, minimum 50mm wide. Thickness same as sheet metal being secured.
- .7 Fasteners: stainless steel, concealed.
- .8 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

## **2.05 FABRICATION**

- .1 Fabricate roof components to comply with dimensions, profiles, thickness and details as shown on shop drawings, including all companion flashing.
- .2 Fabricate all components of the roof system in the factory, ready for field installation.
- .3 Provide roof sheet and all accessories in the longest practical length to minimize field lapping of joints.

## **3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Verify that surfaces and conditions are ready to accept the Work of this section. Prepare substrate surfaces in accordance with manufacturer's instructions. Notify Departmental Representative in writing of any discrepancies. Commencement of Work or any parts thereof shall mean acceptance of the prepared substrates.

### **3.02 INSTALLATION**

- .1 Use concealed fastenings except where approved by Departmental Representative before installation.
- .2 Provide air barrier as recommended by manufacturer and as indicated.
- .3 Clip: attach Tradition clips using fasteners as recommended by the manufacturer and to suit substrate.
- .4 Roof Panel Installation:
  - .1 Install exterior prefinished roof panels on panel support clips, using manufacturer's proper construction procedure. Ensure metal roofing sheet side-lap is positively retained by clips, and proper sheet coverage is maintained.
  - .2 Install the snap-cap at all side laps as shown on the approved shop drawings. Mitre snap-cap as required to resist water entry.
  - .3 Where indicated on approved shop drawings, secure the end-lap of metal roofing sheets in accordance with the manufacturer's specifications and details to provide a weather-tight seal. Exposed fasteners to match colour of the roof sheet.
  - .4 Provide notched and formed closures, sealed against weather penetration, at changes in pitch, and at ridges and eaves, where required.

- .5 Install all companion flashing indicated. Use concealed fasteners when possible.  
Exposed fasteners to match colour of roof sheet.

**3.03 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 61 00 – Sheet Metal Roofing.
- .4 Section 07 92 00 – Joint Sealants.
- .5 Section 08 50 00 – Windows.

### **1.02 REFERENCES**

- .1 The Aluminum Association Inc. (AAI)
  - .1 AAI-Aluminum Sheet Metal Work in Building Construction-2002.
  - .2 AAI DAF45-03(R2009), Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 653/A 653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM A 792/A 792M-10, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
  - .3 ASTM D 523-08, Standard Test Method for Specular Gloss.
- .3 Roofing Contractors Association of British Columbia (RCABC)
  - .1 RCABC Roofing Practices Manual, current edition.
- .4 Canadian Standards Association (CSA International)
  - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 33 - Health and Safety Requirements.
- .3 Samples:
  - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colour.
- .4 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
  - .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

- .2 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3, FIELD QUALITY CONTROL.

#### **1.04 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

### **2 PRODUCTS**

#### **2.01 PREFINISHED STEEL SHEET**

- .1 Prefinished steel to ASTM A653M, Grade 230 or AZ150 Galvalume, sheet steel conforming to ASTM A1792M Grade 230, Thickness: 0.635mm (24 ga.).
- .2 Finish coating: Polyvinylidene Fluoride (PVDF),
  - .1 Acceptable Manufacturer:
    - .1 Cascadia Metals.
    - .1 Colour: weathered zinc, 12000 series PVDF, as indicated.
  - .2 Or pre-approved alternative.

#### **2.02 ACCESSORIES**

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Plastic cement: to CAN/CGSB 37.5.
- .3 Underlay for metal flashing: in accordance with Section 07 27 60 – Air Barrier.
- .4 Sealants: in accordance with Section 07 92 00 – Joint Sealants.
- .5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
- .6 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.
- .7 Washers: of same material as sheet metal, 1 mm thick with rubber backings.
- .8 Touch-up paint: as recommended by manufacturer.

#### **2.03 FABRICATION**

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable as indicated.
- .2 Form pieces in 2400 mm maximum lengths.
  - .1 Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm.
  - .1 Mitre and seal corners with sealant.

- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

## **2.04 METAL FLASHINGS**

- .1 Form flashings to profiles indicated and to match existing.

## **2.05 PREFORMED METAL CAP FLASHINGS**

- .1 Form metal cap flashing of 0.635mm (24 ga.) premium sheet metal.

## **2.06 PREFORMED GLU-LAM BEAM WRAPPINGS**

- .1 Form metal cap flashing of 0.635mm (24 ga.) premium sheet metal.

# **3 EXECUTION**

## **3.01 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

## **3.02 INSTALLATION**

- .1 Install sheet metal work in accordance with CRCA FL series details, AAI-Aluminum Sheet Metal Work in Building Construction as detailed.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal.
  - .1 Secure in place and lap joints 100 mm.
- .4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
  - .1 Flash joints using S-lock standing seams forming tight fit over hook strips, as detailed.
- .5 Lock end joints and caulk with sealant.
- .6 Install surface mounted reglets true and level, and caulk top of reglet with sealant.
- .7 Insert metal flashing under cap flashing to form weather tight junction.
- .8 Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.
- .9 Caulk flashing at cap flashing with sealant.

## **3.03 FIELD QUALITY CONTROL**

- .1 Manufacturer's Field Services:
  - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

**3.04 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 07 27 60 – Air Barriers.
- .3 Section 07 61 00 – Sheet Metal Roofing.
- .4 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .5 Section 07 92 00 – Joint Sealants.
- .6 Section 08 50 00 – Windows.

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C920-11 – Standard Specification for Elastomeric Joint Sealants.
  - .2 ASTM C1193-13 – Standard Guide for Use of Joint Sealants.
  - .3 ASTM C1184-13 – Standard Specification for Structural Silicone Sealants.
- .2 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
  - .1 Caulking compound.
  - .2 Primers.
  - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.

- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Instructions to include installation instructions for each product used.

#### **1.04 QUALITY ASSURANCE/MOCK-UPS**

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .4 Locate where directed by Departmental Representative.
- .5 Submit colour photographs of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

#### **1.06 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Place materials defined as hazardous or toxic in designated containers.
- .4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .5 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .6 Divert unused joint sealing material from landfill to official hazardous material collections site.



- .7 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .8 Fold up metal banding, flatten, and place in designated area for recycling.

#### **1.07 SITE CONDITIONS**

- .1 Environmental Limitations:
  - .1 Do not proceed with installation of joint sealants under following conditions:
    - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
    - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
  - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
  - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

#### **1.08 ENVIRONMENTAL REQUIREMENTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

#### **1.09 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide manufacturer's standard 5 year warranty under provisions of Section 01 78 00 - Closeout Submittals. Warranty to be executed by authorized company official.
- .3 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.

### **2 PRODUCTS**

#### **2.01 SEALANT MATERIALS**

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

- .2 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.
- .3 Sealant materials to be from one source, from one manufacturer.

## **2.02 SEALANT MATERIAL DESIGNATIONS**

- .1 Type 1: Silicones Neutral One Part.
  - .1 Non-sag to ASTM C920, Type S, Grade NS, Class 100/50, Use T, NT, M, G, A and O, colour manufacturer's standard colour range, to match.
    - .1 Acceptable Product: Dow Corning 790 Silicone Building Sealant.
      - .1 Dow Corning Construction Primer P.
    - .2 Or pre-approved alternative.
- .2 Type 2: Silicones Neutral One Part.
  - .1 Non-sag to ASTM C920-11 Type S, Grade NS, Class 50, Use NT, G, M, A and O, ASTM C719 for silicone sealants designed to be used in conjunction with waterproofing systems.
    - .1 Acceptable Product: Dow Corning 756 SMS Building Sealant.
      - .1 Primer: Dow Corning 1200 OS Primer.
    - .2 Or pre-approved alternative.
      - .1 Colour: to be selected from standard range by Departmental Representative.
- .3 Type 3: Preformed Compressible and Non-Compressible back-up materials.
  - .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    - .1 Extruded closed cell foam backer rod.
    - .2 Size: oversize 50%.
  - .2 Bond Breaker Tape.
    - .1 Polyethylene bond breaker tape which will not bond to sealant.

## **2.03 SEALANT SELECTION**

- .1 Building substrates involving concrete: Sealant type: 1.
- .2 All other substrate joints: Sealant type: 2.

## **2.04 JOINT CLEANER**

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

## **3 EXECUTION**

### **3.01 PROTECTION**

- .1 Protect installed Work of other trades from staining or contamination.

### **3.02 SURFACE PREPARATION**

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

### **3.03 PRIMING**

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

### **3.04 BACKUP MATERIAL**

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

### **3.05 MIXING**

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

### **3.06 APPLICATION**

- .1 Sealant.
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

- .3 Cleanup.
  - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
  - .2 Remove excess and droppings, using recommended cleaners as work progresses.
  - .3 Remove masking tape after initial set of sealant.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 10 00 – Rough Carpentry.
- .2 Section 07 27 60 – Air Barrier.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealants.

### **1.02 REFERENCES**

- .1 American Architectural Manufacturers Association (AAMA):
  - .1 AAMA 502 - Voluntary Specification for Field Testing of Windows and Sliding Doors.
  - .2 AAMA 613-08 - Voluntary Performance Requirements and Test Procedures for Organic Coatings on Plastic Profiles.
- .2 American Society for Testing and Materials (ASTM):
  - .1 ASTM C 1036-11e1 – Standard Specifications for Flat Glass.
  - .2 ASTM C 1048-12e1 – Standard Specification for Heat Strengthened and Fully Tempered Flat Glass.
  - .3 ASTM E 283-04(2012) - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
  - .4 ASTM E 547-00(2009) - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference.
- .3 Window and Door Manufacturers Association (WD):
  - .1 ANSI/AAMA/NWWDA 101/I.S.2-97 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
- .4 CSA International
  - .1 AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS North American Fenestration Standard/Specification for Windows, Doors and Skylights.
  - .2 CSA440S1-09, Canadian Supplement for AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS North American Fenestration Standard/Specification for Windows, Doors and Skylights.

### **1.03 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for windows and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings: submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Shop drawings to indicate dimensions, construction, component connections and locations, anchorage methods and locations, hardware locations, and

installation details.

- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit duplicate samples of representative model of each type window.
  - .4 Include frame, sash, sill, glazing and weatherproofing method, surface finish and hardware. Show location of manufacturer's nameplates.
  - .5 Include 300 mm long samples of head, jamb and sill, to indicate profile.
- .5 Test and Evaluation Reports:
  - .1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
    - .1 Windows classifications.
    - .2 Fiberglass.
    - .3 Air tightness.
    - .4 Water tightness.
    - .5 Wind load resistance.
    - .6 Condensation resistance.
    - .7 Block operation - sliding windows only.
    - .8 Ease of operation - windows with operable lights.
    - .9 Forced entry resistance.
    - .10 Mullion deflection - combination and composite windows.

#### **1.04 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for windows for incorporation into manual.

#### **1.05 QUALITY ASSURANCE**

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

#### **1.06 MOCK UP**

- .1 Submit mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation and material application.
- .3 Locate where directed by Departmental Representative.
- .4 Submit colour photographs of mock-up to Departmental Representative and allow 48 hours for review of mock-up by Departmental Representative before proceeding with Work.
- .5 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect windows from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

#### **1.08 WARRANTY**

- .1 Project Warranty: Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Provide manufacturer's standard 20 year warranty for insulated glass, 10 year warranty on non-glass components and 2 year warranty on labour. Warranty to be executed by authorized company official.
- .3 Manufacturer's warranty is in addition to, and not a limitation of, other rights Departmental Representative may have under Contract Documents.

### **2 PRODUCTS**

#### **2.01 MATERIALS**

- .1 All windows by same manufacturer.
- .2 Acceptable Manufacturer:
  - .1 Pella Corporation.
    - .1 Fiberglass Impervia Commercial (fixed and sliding windows)
    - .2 Or pre-approved alternative.
- .3 Window Assembly Performance:
  - .1 NFRC U-Factor (total unit): 0.27 minimum.
  - .2 Design pressure (psf): 50.
  - .3 Water penetration: none at 7.5 psf.
  - .4 Air infiltration (@1.57 psf): 0.10 cfm.
  - .5 STC rating: 28 for fixed windows, 25-27 for sliding windows.
  - .6 OITC rating: 24 for fixed windows, 21-22 for sliding windows.
- .4 Fixed Window Frame - Fibreglass:
  - .1 Factory-assembled fixed window frame.
  - .2 Frame material: duracast, 5-layer fiberglass material consisting of interlocking mat (2 layers), structural core, fiber glass heat set resin and baked on finish.
  - .3 Type:
    - .1 block frame with installation clips for masonry wall installation.
    - .2 block frame with offset fin for installation in wood clad wall.
  - .3 Interior and exterior frame: pultruded, fiberglass composite with foam inserts.
  - .4 Overall frame depth: 75mm.
  - .5 Nominal wall thickness of fiberglass members: 1.27mm to 2.0mm.
  - .6 Frame corners:
    - .1 Mitred.

- .2 Joined and bonded with thermoset polyurethane adhesive, nylon corner lock and mechanically fastened.
- .7 Sill fitted with weep valve assemblies.
- .8 Insulation: interior and exterior frames filled with foam insulation.
- .5 Glass:
  - .1 Washrooms: Float glass: 17.5mm thick insulating glass unit, tempered obscure privacy to meet ASTM C1048.
  - .2 All other glass: Float glass: 17.5mm thick insulating glass unit, clear, advanced Low-E coated with argon to meet ASTM C1036, Quality 1.
- .6 Installation Accessories:
  - .1 Flashing/Sealant Tape:
    - .1 Aluminum-foil-backed butyl window flashing tape.
    - .2 Maximum total thickness: .33mm.
    - .3 UV resistant.
    - .4 Verify sealant compatibility with sealant manufacturer.
  - .2 Weather Stripping (sliding window):
    - .1 Vent sash: dual weather-stripped around perimeter with fin-type, dual-pile weather stripping.
  - .2 Sealants:
    - .1 Interior perimeter sealant: in accordance with Section 07 92 00 – Joint Sealants.
    - .2 Exterior perimeter sealant: in accordance with Section 07 92 00 – Joint Sealants.
  - .3 Block frame installation accessories:
    - .1 For masonry installation: installation clips.
    - .2 For all other installation: offset vinyl installation fins.

## **2.02 WINDOW TYPE AND CLASSIFICATION**

- .1 Types:
  - .1 Sliding: horizontal two panel vent-fixed (XO) equal sash, sizes as required to replace existing, where indicated.
  - .2 Fixed: as indicated, sizes as required to replace existing, where indicated.
- .2 Performance Requirements:
  - .1 Windows shall conform to the requirements in:
    - .1 AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors and Skylights.
    - .2 CSA A440S1, Canadian Supplement for AAMA/WDMA/CSA 101/I.S.2/A440 NAFS – North American Fenestration Standard/Specification for Windows, Doors and Skylights.

## **2.03 FABRICATION**

- .1 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.
- .2 Windows to accommodate the following opening tolerances:
  - .1 Vertical dimensions between high and low points: +6mm/-0mm.
  - .2 Width dimensions: +6mm/-0mm.
  - .3 Building columns or masonry openings: +/-6mm from plumb.



- .3 Brace frames to maintain squareness and rigidity during shipment and installation.

#### **2.04 FINISH**

- .1 Exterior and interior finish: factory applied powder-coat paint, comply with AAMA 613 as follows:
  - .1 Colour: dual colour option as indicated.

#### **2.05 HARDWARE (SLIDING WINDOWS)**

- .1 Rollers:
  - .1 Vents: Equip with 2 nylon roller housings containing 2 acetal rollers each.
  - .2 Rollers: Remove for cleaning and maintenance.
- .2 Lock:
  - .1 Type: Self-aligning, cam-action lock.
  - .2 Windows 900mm High or Greater: 2 locks.
  - .3 Standard Finish: Match window interior.

#### **2.06 AIR BARRIER AND VAPOUR RETARDER**

- .1 Equip window frames with factory site installed air barrier and vapour retarder material for sealing to building air barrier and vapour retarder as follows:
  - .1 Material: identical to, or compatible with, building air barrier and vapour retarder materials to provide required air tightness and vapour diffusion control throughout exterior envelope assembly.
  - .2 Material width: adequate to provide required air tightness and vapour diffusion control to building air barrier and vapour retarder from interior.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

#### **3.02 INSTALLATION**

- .1 Window installation:
  - .1 Install in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 and manufacturer's installation instructions.
  - .2 Install windows to be weather-tight.
- .2 Sill installation:
  - .1 Install sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces.
  - .2 Integrate window system installation with exterior water-resistant barrier using flashing/sealant tape. Apply and integrate sealant with water-resistant barrier as

- indicated.
- .3 Cut sills to fit window opening.
- .4 Secure sills in place with anchoring devices located at ends and evenly spaced 600 mm on centre in between.
- .5 Fasten drip deflectors with self-tapping stainless steel screws.
- .6 Maintain 6 to 9 mm space between butt ends of continuous sills. For sills over 1200 mm in length, maintain 3 to 6 mm space at each end.
- .3 Sealants:
  - .1 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip deflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.
  - .2 Apply sealant in accordance with Section 07 92 00 - Joint Sealants. Conceal sealant within window units except where exposed use is permitted by Departmental Representative.
  - .3 Place interior seal around window perimeter to maintain continuity of building thermal and air barrier using sealant.
  - .4 Seal window to exterior wall cladding with sealant and related backing materials at perimeter of assembly as indicated.

### **3.03 QUALITY CONTROL**

- .1 Factory Testing:
  - .1 Field-test windows in accordance with AAMA 502, Test Method A.

### **3.04 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning. Clean frames and glass in accordance to manufacturer's recommendations. Remove labels and visible markings.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.05 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by window installation.

**END OF SECTION**

## **1 GENERAL**

### **1.01 SUMMARY OF WORK**

- .1 Staining of new cedar wood siding and repainting of metal doors and door frames as indicated.

### **1.02 RELATED REQUIREMENTS**

- .1 Section 06 20 00 – Finish Carpentry (wood siding).

### **1.03 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 The Master Painters Institute (MPI)
  - .1 Maintenance Repainting Manual, current edition, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.
- .3 National Fire Code of Canada.
- .4 Society for Protective Coatings (SSPC)
  - .1 Systems and Specifications, SSPC Painting Manual, current edition.

### **1.04 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Contractor: to have a minimum of five years proven satisfactory experience.
  - .2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.
- .2 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.
- .3 Materials (primers, paints, thinners, and solvents) to be in accordance with the latest edition of the MPI Approved Product List and to be from a single manufacturer for each system used.
- .4 Paint materials such as turpentine, to be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.
- .5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .6 Schedule repainting operations to prevent disruption by other trades if applicable and by occupants in and about building.

### **1.05 SCHEDULING**

- .1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

- .2 Obtain written authorization from Departmental Representative for changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants in and about building.

#### **1.06 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide samples and submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit duplicate 200 x 300 mm sample panels of each paint and coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:
    - .1 12 mm western red cedar siding for finishes over wood surfaces.
    - .2 Sheet metal material for finishes over metal.
  - .2 When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.
  - .3 Submit full range of available colours where colour availability is restricted.
- .2 Provide product data and manufacturer's installation/application instructions for paints and coating products to be used.
- .3 Quality Assurance Submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.
- .4 Closeout Submittals:
  - .1 Provide records of products used. List products in relation to finish system and include following:
    - .1 Product name, type and use (i.e. materials and location).
    - .2 Manufacturer's product number.
    - .3 Colour code numbers.
    - .4 Manufacturer's Material Safety Data Sheets.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- .1 Packing, shipping, handling and unloading:
- .2 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:
  - .1 Deliver and store materials in original containers, sealed, with labels intact.
  - .2 Labels to indicate:
    - .1 Manufacturer's name and address.
    - .2 Type of paint or coating.
    - .3 Compliance with applicable standard.
    - .4 Colour number in accordance with established colour schedule.
  - .3 Remove damaged, opened and rejected materials from site.
  - .4 Store and handle in accordance with manufacturer's recommendations.
  - .5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.
  - .6 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. Upon completion of operations, return areas to clean condition to approval of Departmental Representative.

- .7 Remove paint materials from storage in quantities required for same day use.
- .8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .9 Fire Safety Requirements:
  - .1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
  - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site daily.
  - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.
- .2 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .2 Paint finishes and related materials are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
  - .3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
  - .4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
  - .5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:
    - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
    - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
    - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
    - .4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.
    - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
    - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
  - .6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

#### **1.08 AMBIENT CONDITIONS**

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer.
  - .2 Do not perform repainting work when:
    - .1 Ambient air and substrate temperatures are below 10 degrees C.
    - .2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

- .3 Substrate and ambient air temperatures are expected to fall outside paint manufacturer's prescribed limits.
  - .4 Relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.
  - .5 Rain or snow is forecast to occur before paint has thoroughly cured.
  - .6 It is foggy, misty, raining or snowing at site.
- .2 Application Requirements:
- .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are such that airborne particles will affect quality of finished surface.
  - .2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted.
  - .3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.
  - .4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.
  - .5 Do not apply paint when:
    - .1 Temperature is expected to drop below 10 degrees C before paint has thoroughly cured.
    - .2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
    - .3 Surface to be painted is wet, damp or frosted.
  - .6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
  - .7 Schedule repainting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
  - .8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Paint materials listed in latest edition of MPI Approved Product List (APL) are acceptable for use on this project.
- .2 Paint materials for new stain and repaint systems: each products of single manufacturer.
- .3 Use only MPI listed materials.
- .4 Paints, coatings, thinners, solvents, cleaners and other fluids used in staining and repainting to be as follows:
  - .1 Not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
  - .2 Be manufactured without compounds which contribute to ozone depletion in upper atmosphere.
  - .3 Be manufactured without compounds which contribute to smog in lower atmosphere.
  - .4 Be manufactured where matter generating 'Biochemical Oxygen Demand' (BOD) in undiluted production plant effluent discharged to natural watercourse or sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.

- .5 Be manufactured where total suspended solids (TSS) content in undiluted production plant effluent discharged to natural watercourse or sewage treatment facility lacking secondary treatment does not exceed 15 mg/L.
- .5 Paints and coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).
- .6 Paints and coatings must not be formulated or manufactured with formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

## **2.02 COLOUR**

- .1 New wood siding: colour to be selected by Departmental Representative.
- .2 Existing exterior metal doors and door frames: colour to match new metal roof panels, in accordance Section 07 61 00 – Sheet Metal Roofing and new flashings in Section 07 62 00 – Sheet Metal Flashing and Trim.

## **2.03 MIXING AND TINTING**

- .1 Perform colour tinting operations prior to delivery of paint and stain to site.
- .2 Where thinner is used, addition not to exceed paint and stain manufacturer's recommendations. Do not use kerosene or such organic solvents to thin water-based paints.
- .3 Re-mix paint/coatings in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

## **2.04 GLOSS/SHEEN RATINGS**

- .1 Paint gloss: defined as sheen rating of applied paint, in accordance with following MPI gloss/sheen standard values:

Gloss Level Category	Unit at 60 Degrees	Units at 85 Degrees
G1 – Matte finish	0 to 5	Maximum 10
G2 – Velvet finish	0 to 10	10 to 35
G3 – Eggshell finish	10 to 25	10 to 35
G4 – Satin finish	20 to 35	Minimum 35
G5 – Semi-gloss finish	35 to 70	
G6 – Gloss finish	70 to 85	
G7 – High Gloss finish	More than 85	

- .2 Gloss level ratings of repainted surfaces as specified.

## **2.05 EXTERIOR PAINTING SYSTEMS**

- .1 Galvanized Metal: High Contact/High Traffic Areas (Doors and Frames).
  - .1 REX 5.3B – Alkyd. Gloss level to match metal flashing gloss finish.
- .2 Wood Siding:
  - .1 EXT 6.4C - Solid colour stain finish.

### **3 EXECUTION**

#### **3.01 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

#### **3.02 EXAMINATION**

- .1 Exterior surfaces requiring staining or repainting: inspected by painting contractor who will notify Departmental Representative in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- .2 Where an assessed degree of surface degradation of DSD-1 to DSD-3 before preparation of surfaces for repainting is revealed to be DSD-4 after preparation, repair or replacement of such unforeseen defects discovered are to be corrected, as mutually agreed, before repainting is started.

#### **3.03 PREPARATION**

- .1 Perform preparation and operations for exterior staining and re-painting in accordance with MPI Maintenance Repainting requirements except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
- .3 Remove, clean and prepare exterior elements indicated to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and surface debris by brushing, wiping with dry, clean cloths.
  - .2 Wash surfaces with a biodegradable detergent (and bleach where applicable) and clean warm water using a stiff bristle brush to remove dirt, oil and surface contaminants.
  - .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
  - .4 Allow surfaces to drain completely and to dry thoroughly.
  - .5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
- .4 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminants from surfaces, pockets and corners to be repainted by brushing with clean brushes or brushing/vacuum cleaning as required.
- .5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects from previously painting (e.g. runs, and sags) that are visible from distance up to 1000 mm.



### **3.04 EXISTING CONDITIONS**

- .1 Prior to commencing work, examine existing exterior elements to be stained and repainted and report in writing to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions of surfaces that will adversely affect this work.
- .2 No work to commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to Painting Subcontractor and Departmental Representative.
- .3 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in the MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

Condition Description	
DSD-0	Sound Surface (includes visual (aesthetic) defects that do not affect film's protective properties).
DSD-1	Slightly Deteriorated Surface (indicating fading: gloss reduction, slight surface contamination, minor pin holes and scratches).
DSD-2	Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking and staining).
DSD-3	Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges).
DSD-4	Substrate Damage (repair or replacement of surface required).

### **3.05 PROTECTION**

- .1 Staining of wood siding and re-painting of mechanical elements and doors onsite is acceptable however must be done in controlled environment.
- .2 All door hardware to be removed, including but not limited to, hinges, closers, locksets and levers.
- .3 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.
- .4 Protect factory finished products and equipment.
- .5 Protect general public and building occupants in and about the building.

### **3.06 APPLICATION**

- .1 Apply paint by method that is best suited for substrate being stained or repainted using brush for doors and door frames. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Wood siding to have factory applied primer, single coat. Final coat to be done in controlled environment.
- .3 Brush and Roller Application (wood siding, exterior door and door frames):
  - .1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
  - .2 Work paint into cracks, crevices and corners.

- .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
  - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces to be free of roller tracking and heavy stipple unless approved by Departmental Representative.
  - .5 Remove runs, sags and brush marks from finished work and repaint.
  - .6 Wood siding to be stained on all four sides. If wood siding cut after staining, new cut area to be stained.
- 
- .4 Apply paint coats in a continuous manner and allow surfaces to dry and cure between coats for minimum time period as recommended by manufacturer. Minimum dry film thickness of coats not less than that recommended by manufacturer. Repaint thin spots or bare areas before next coat of paint is applied.
  - .5 Sand and dust between coats to remove visible defects.

### **3.07 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .3 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.
- .4 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- .5 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction and as specified.
- .6 Recycle paint and coatings in excess of repainting requirements as specified.

### **3.08 INSTALLATION AND RESTORATION**

- .1 Contractor to install cedar siding as indicated once staining work complete. If wood siding is cut after staining, new cut area to be stained in accordance with this section.
- .2 Contractor to re-install painted doors onto door frames along with associated hardware.

**END OF SECTION**

# **APPENDIX A**



Public Works and Government Services Canada  
Suite 219 – 800 Burrard Street  
Vancouver, B.C.  
V6Z 0B9

July 26, 2013

Attention: Ms. Amy Moizumi, B.Sc, (Agr)  
Environmental Specialist, Environmental Services

Subject: FINAL - Limited – Hazardous Building Materials Assessment– Waneta  
Port of Entry – 10290 Highway 22A, Salmo, British Columbia

DST File No.: BE-VC-017181

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## **1.0 INTRODUCTION**

DST Consulting Engineers Inc. (DST) is pleased to provide the results of our Hazardous Building Materials Assessment limited to the roof of the Waneta Border Crossing located in Trail, British Columbia (to be referred to hereafter as “the Subject Building”).

The assessment was completed to identify the presence or absence of Asbestos-Containing Materials (ACMs), Lead-Based Coatings (LBCs), Polychlorinated Biphenyls (PCBs), Ozone-Depleting Substances (ODS) and Elemental Mercury in preparation for renovation activities, and to provide appropriate recommendations based on the findings of our assessment.

The assessment was completed on July 16, 2013 by David Kernel, CLI, CLR, Environmental Technologist of DST.

This report provides an outline of applicable regulations and guidelines, our methodology, the results of the assessment, and conclusions with appropriate recommendations.

## **2.0 REGULATIONS AND GUIDELINES**

### **2.1 Federal Regulations**

#### **2.1.1 Canada Labour Code**

In federal jurisdictions, hazardous building materials are regulated under the *Canada Labour Code, Part II, Part X, Hazardous Substances*.

#### **2.1.2 Asbestos-Containing Materials (ACMs)**

ACMs are regulated under the *Canada Occupational Health and Safety Regulations, (SOR/86-304)*.

In addition, PWGSC Departmental Policy 057 provides specific requirements for the management and abatement of ACMs in federal facilities.

#### **2.1.3 Lead-Based Coatings (LBCs)**

The *Hazardous Products Act (HPA), Surface Coating Materials Regulation (SOR/2005-109)* provides regulatory requirements for the sale and labeling of surface coatings.

The Surface Coating Materials Regulation reduced the threshold for lead in paint from 5,000 mg/kg to 600 mg/kg, and in 2010, to 90 mg/kg. However, Provincial regulations do not require lead controls for surface coatings containing <600 mg/kg, as such, DST identifies a lead-based coating as a coating containing >600 mg/kg or >0.05 mg/cm<sup>2</sup> (by XRF analyzer).

#### **2.1.4 Ozone Depleting Substances (ODS)**

Ozone Depleting substances are regulated under the Canadian Environmental Protection Act (CEPA), "*Federal Halocarbon Regulations, 2003, (SOR/2003-289)*".

#### **2.1.5 Polychlorinated Biphenyl's (PCBs)**

PCBs are regulated under the Canadian Environmental Protection Act (CEPA), specifically under the "*PCB Regulations*" (SOR/2008-273), including amendments to December 8, 2011.

#### **2.1.6 Transportation of Dangerous Goods Act**

The Transportation of Dangerous Goods Act provides detailed requirements for the transportation of hazardous materials, including lead-containing wastes.

## **2.2 Provincial Regulations**

In British Columbia, the management of hazardous building materials in the work place is regulated by WorkSafeBC under the Workers' Compensation Act (effective April 15, 1998), as amended by the Workers' Compensation (Occupational Health and Safety) Amendment Act (effective October 1, 1999). Specific requirements of the Occupational Health and Safety Amendment Act are prescribed in the British Columbia Occupational Health and Safety (BC OH&S) Regulation.

### **2.2.1 Elemental Mercury**

Mercury-containing equipment is regulated under Part 5, section 5.49 of the BC OH&S Regulation.

### **2.2.2 Hazardous Wastes**

In British Columbia, environmental matters pertaining to waste generally fall under the jurisdiction of the British Columbia Ministry of Environment (MoE), pursuant to the Environmental Management Act. The key waste regulation under the Environmental Management Act relating to hazardous building materials is the Hazardous Waste Regulation (HWR), as amended from time to time. The HWR provides the requirements for the proper handling, storage, transportation, treatment, recycling and disposal of hazardous wastes in the province. The regulation also outlines the materials and criteria to be used to characterize waste as hazardous.

## **3.0 METHODOLOGY**

The site review and sampling was completed by DST on July 16, 2013.

Suspect hazardous building materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Visual identification of materials suspected to contain hazardous materials were supported by the analysis of representative samples.

Suspect ACM samples were analyzed for asbestos content at Cardno ATC (ATC) following the National Institute for Occupational Safety and Health (NIOSH) Method 9002.

Suspect LBCs samples were tested for lead content using a Niton X-Ray Fluorescence (XRF) spectroscopy detector. The Niton XRF is designed to detect and quantify the amount of lead present in painted surfaces. Measurements were made following Niton XRF standard operating procedures for lead in surface coating measurements.

Suspected ozone-depleting substances (ODSs), elemental mercury, sources of polychlorinated biphenyls (PCBs), were visually identified based on appearance, age, and knowledge of historic applications/locations.

#### 4.0 FINDINGS

##### 4.1 Asbestos-Containing Materials (ACMs)

Eight (8) samples of suspect ACMs were collected and analyzed for asbestos content. The sample descriptions and analytical results are summarized in **Table 1**, below.

Asbestos analytical reports are included in **Appendix I**.

Drawings indicating sample point locations are presented in **Appendix II**.

Table 1: Analysis of Suspect ACMs Waneta Port of Entry – Roof – Salmo, BC			
Sample I.D.	Sample Description	Sample Location	Asbestos Content & Type
WAN-001	Roof Core Sample	Torch On Awning	None-Detected
WAN-002	Roof Core Sample	Torch On Awning	None-Detected
WAN-003	Building Paper Under Flashing	Lower Roof	None-Detected
WAN-004	Vent Penetration Mastic	Vent Penetration Lower Roof	None-Detected
WAN-005	Brown And Grey Mastic	Flashing – South West Corner	None-Detected
WAN-006	Red Putty	Flashing - Lower Roof (North)	None-Detected
WAN-007	Roof Core Sample	Tar And Gravel - Lower Roof	None-Detected
WAN-008	Grey Mastic	Steel Clad Roof On Shed. Flashing	None-Detected

Note: **Bold** print indicates asbestos-containing materials.

Based on the analytical results, ACMs were not identified in suspected building materials at the roof area of the Subject Building.



## 4.2 Lead-Based Coatings

Suspect LBC samples that were determined to contain a concentration of lead equal to or  $> 0.05 \text{ mg/cm}^2$  were classified as LBCs, i.e., paints with hazardous levels of lead.

In total, DST identified three (3) suspected LBCs in the Subject Building. A description of the coatings tested, sample point locations and analytical results are summarized in **Table 2 - Lead-Based Coatings Sample Analytical Results**, below.

Lead analytical reports are included in **Appendix I**.

Table 2: Analysis of Suspect LBCs Waneta Port of Entry – Roof – Salmo, BC				
Sample Number	Location / Description	Color	Result (mg/cm <sup>2</sup> )	Lead-Based Coating
<b>1</b>	<b>Waneta Border – Ladder on Roof</b>	<b>Brown</b>	<b>0.08</b>	<b>Yes</b>
2	Waneta Border – Flashing	Brown	0.03	No
3	Waneta Border – Steel Clad Roof System	Brown/Grey	0.03	No

Notes: **Bold Print** – Indicates a positive result, i.e., hazardous levels of lead in the surface coating.

Based on the results of DST's assessment, the brown paint applied to the roof top ladder of the Subject Building was found to contain hazardous levels of lead.

## 4.3 Ozone Depleting Substances (ODSs)

Equipment suspected to contain ozone-depleting substances were not observed on the roof of the Subject Building.

## 4.4 Elemental Mercury

Equipment containing Elemental Mercury were not observed on the roof of the Subject Building.

## 4.5 Polychlorinated Biphenyls (PCBs)

PCB-containing equipment were not observed on the roof of the Subject Building.

## 5.0 RECOMMENDATIONS

### 5.1 Lead-Based Coatings

Control the preparation of painted surfaces in accordance with the requirements of WorkSafeBC, specifically but not limited to include those requirements prescribed in

Parts 5.48-5.59 – Controlling Exposure and Parts 6.59-6.69 – Lead of the BC OH&S Regulation.

DST recommends reference to WorkSafeBC publication "*Lead-Containing Paints and Coatings – Preventing Exposure in the Construction Industry*", 2011. This manual provides a guide to current practices that are to be followed in the Province of British Columbia, providing basic information on lead and lead products, health hazards and requirements for worker protection, safe work procedures and principles that should be followed in selecting the most suitable technique for the safe abatement of LBCs.

Lead-containing wastes should be disposed of in accordance with the British Columbia Ministry of Environment and should be transported in accordance with the requirements of the Federal Transportation of Dangerous Goods Act.

## **6.0 LIMITATIONS**

The conclusions and recommendations contained in this assessment report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

1. The data and findings presented in this report are valid as of the dates of the investigations. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further exploration at the property, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.
2. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence through the period of assessment.
3. DST's assessment reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial, or local governmental agencies. Any use of the assessment report constitutes acceptance of the limits of DST's liability. DST's liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.

## 7.0 CLOSING

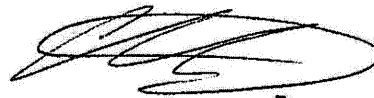
We hope the information presented in this document meets your current requirements. If you have any questions, or require additional information please contact us at your convenience.

Yours truly,

**DST Consulting Engineers Inc.**

A rectangular box containing a handwritten signature in cursive script, which appears to read "David Kernel".

David Kernel, CLI, CLR  
*Environmental Technologist*

A handwritten signature in cursive script, which appears to read "Christian Injates".

Christian Injates, CEC, CEM  
*Sector Head, Building Environments*

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(PART OF TENDER PROJECT R.066395.003 - Appendix A)

**APPENDIX I**

**ANALYTICAL RESULTS  
(Asbestos and Lead)**



Cardno ATC

Fax: 513 782 6908

## Client Information

**Company Name:** DST Consulting Engineers Inc.  
**Address:** # 200-4125 McConnell Drive  
Burnaby, British Columbia V5A 3J7  
**Phone Number:** 604.436.4588

Project Name: Trail Border Crossings  
Client: Public Works  
Project Number: BE-VC-017181  
P.O. Number:

**Project Manager: Christian Injates**  
**Email Address: [dkernel@dstgroup.com](mailto:dkernel@dstgroup.com)**

## Turnaround Time (Circle One)

Normal  
3 to 5 days

Rush  
24 to 48 hours

Emergency Rush  
less than 24 hours

## Type of Analysis Requested (Circle One)

### Bulk Asbestos (PLM)

Air Asbestos  
(NIOSH 7400)

## Lead Analysis

## Biological

TEM

## Sample Log

[illegible]

Special Instructions:

## Chain of Custody

Relinquished By:

Date/Time

Received By:

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## LEAD ANALYSIS REPORT

<b>Client:</b> PWGSC	<b>Date:</b> July 25, 2013
<b>Attention:</b> Amy Moizumi	<b>Date Submitted:</b> July 16, 2013
<b>Project Name:</b> Waneta Border X Hazmat Assessment	
<b>Project Number:</b> BE-VC-017181	

### LEAD-BASED COATING SAMPLE ANALYTICAL RESULTS

Sample Number	Location / Description	Color	Result (mg/cm2)	Lead-Based Coating
1	Waneta Border – Ladder on Roof	Brown	0.08	Yes
2	Waneta Border – Flashing	Brown	0.03	No
3	Waneta Border – Steel Clad Roof System	Brown/Grey	0.03	No

#### ANALYTICAL METHODOLOGY:

A Niton X-Ray Fluorescence (XRF) spectroscopy detector was used to make measurements on suspect building painted surfaces. The Niton XRF is designed to detect and quantify the amount of lead present primarily in painted surfaces. Measurements were made following Niton XRF standard operating procedures for lead in surface coating measurements.

Suspect surface coating samples analyzed were identified to have hazardous levels of lead (0.05 or greater) with a detection limit of  $\geq 0.05$  of lead per square centimeter of surface area (mg/cm2).

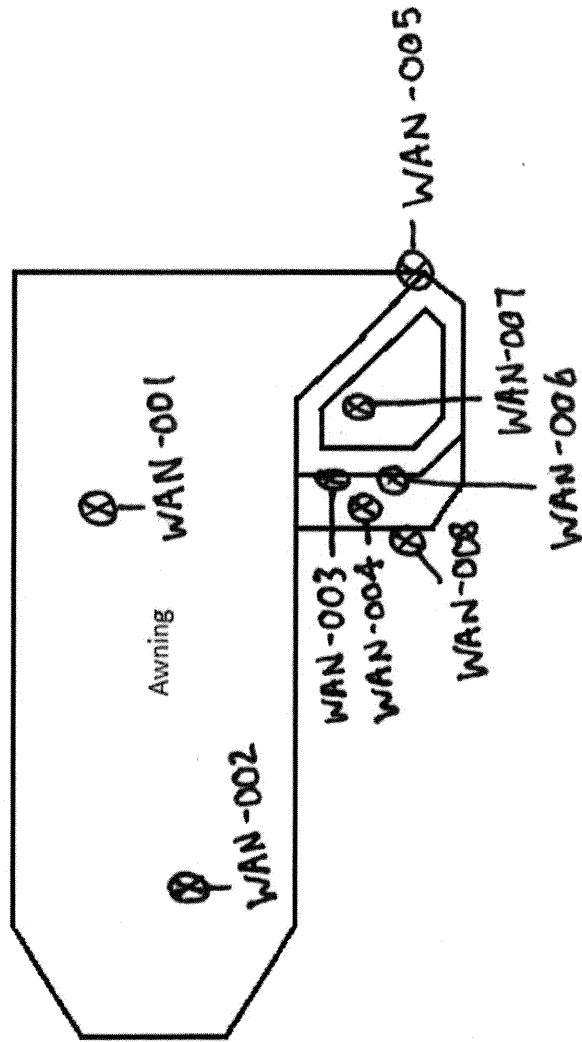
(PART OF TENDER PROJECT R.066395.003 - Appendix A)

**APPENDIX II**

**DRAWING OF SAMPLE LOCATIONS**

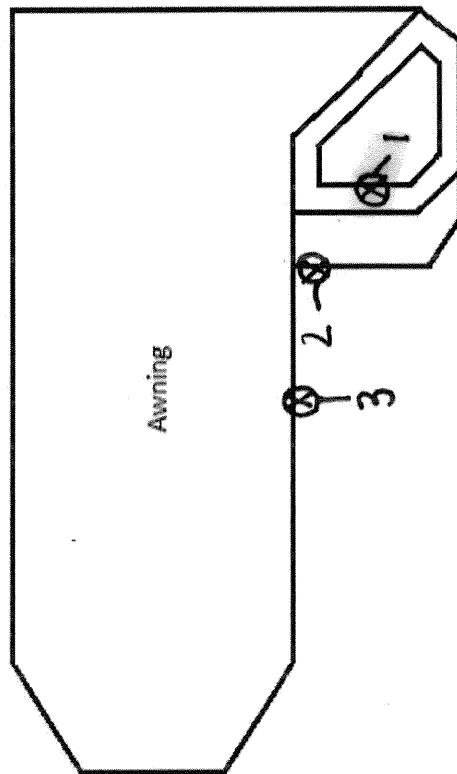


Waneta Border Crossing, Roof  
ACM Locations



X = Sample locations

Waneta Border Crossing, Roof  
LBC Sample Locations



⊗ = Sample locations

■ = Positive LBCs